

(NON-) FLOATING NUMERAL QUANTIFIERS IN JAPANESE

by

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A thesis submitted to the

School of Graduate Studies

in partial fulfillment of the requirements for the degree of

Master or Arts

Department of Linguistics

Memorial University

May 2014

St. John's Newfoundland and Labrador Canada

ABSTRACT

The aim of this thesis is to uncover syntactic and semantic properties of Floating Numeral Quantifiers (FNQ) in Japanese, and to introduce ‘non-floating’ quantifiers, i.e., manner adverbial quantifiers and topical adverbial quantifiers, which have no structural relations, such as constituency or locality, with the noun phrase they modify. First, it is explained which locations a floating quantifier may appear at, and how the distributions can be accounted for. Also, I show how scrambling plays a role in generating Quantifier Floating constructions. Second, I document such semantic properties of FNQ as distributivity, (non-) specificity, partitivity, relative scope, and resistance to scrambling effect. Last, I show two adverbial quantifiers, which do not show above-mentioned syntactic and semantic properties of FNQ. Manner adverbial quantifiers appear in a preverbal position, and allow a collective reading. Topical adverbial quantifiers occupy at the beginning of sentences, and take a scope in a different way from FNQs.

ACKNOWLEDGEMENTS

It was my great pleasure to work with and be supervised by Phil Branigan. I owe him too much to describe here to write up this thesis that is filled, no pan intended, with his corrections and sighs. His intelligence, deep insights and (kind of) sense of humor amazed me at every discussion for which he saved me time almost every week even during a sabbatical. As well, faculty members, staff, and fellow students in the department played a significant role in my program. I wish I were more eloquent and fluent to convey my appreciation of their leads and supports.

My heartfelt thanks also go to teachers in Japan, especially Hisashi Morita, Yasuyuki Kitao, and Hirotaka Mitomo, all of whom made me crazy for linguistics and have given me a number of eye-opening advices and directions from the very beginning of my academic life.

Moreover, successful (I hope) completion of this thesis should be attributed to non-academic friends, too. Particularly, I would like to show my wholehearted gratitude to friends in St. John's and APU fellows, with whom I could prevent myself from being crazy with an overwhelming workload.

Last but not least, rather most importantly, I dedicate this thesis to my mother, father and brother, all of whom always watched me throughout my MA program gently, kindly and generously like the Atlantic Ocean.

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LIST OF ABBREVIATIONS

ACC: accusative
Adv: adverb
ApP: Applicative Phrase
CAUS: causative
CL: classifier
Coll: collective
DAT: dative
Dist: distributive
DO: direct object
DP: Determiner Phrase
FNQ: floating numeral quantifier
INST: instrumental
IO: indirect object
LOC: locative
NEG: negation
NOM: nominative
NP-NQ: a sequence of an NP followed by NQ
NP: Noun Phrase
NQ: Numeral Quantifier
NumP: Numeral Phrase/Number Phrase
O/OBJ: object
PASS: passive
PAST: past tense
PL: plural
PP: Postpositional Phrase / Prepositional Phrase
Q-NP: an NP structurally containing a quantifier
Q-Raising: Quantifier Raising
QP: Quantifier Phrase
QUESTION: question particle
S: subject
SG: singular
SPEC: specifier
TOP: Topic Marker
TP: Tense Phrase
UFO: Unidentified Flying Object
VP: Verb Phrase
vP: verb Phrase
VPISH: VP Internal Subject Hypothesis
WCO: Weak Crossover
 α P: α Phrase (Miyagawa 2010)

0. INTRODUCTION

0.1. Floating Numeral Quantifiers

Transformational generative grammar is transformational with respect to its theories; the theories have been changing and getting more and more various. So is *Quantifier Floating*; accounts for the phenomenon have been ‘floating’ back and forth. In an attempt to develop an unified or systematic account of Floating Numeral Quantifiers (FNQ), the aim of this thesis is to explore some of the properties of FNQs in Japanese and to provide an account for its implications, mainly focusing on the following: the distribution of FNQs, scrambling and FNQs, semantic properties of FNQs, and non-floating NQs.

A numeral quantifier (NQ) appears at various locations in a sentence in Japanese. For instance, *san-nin* (3-CL) in (1) may precede a noun phrase (NP) it modifies, follow the NP, or be separated away from the NP, as if it were ‘floating’ around.

(1) a. San-nin (no) gakusei-ga kinoo hon-o katta.¹

3-CL of student-NOM yesterday book-ACC bought

‘Three students bought a book yesterday.’

b. Gakusei-ga san-nin kinoo hon-o katta.

student-NOM 3-CL yesterday book-ACC bought

‘Three students bought a book yesterday.’

¹ Gloss and spelling in a citation are modified so that they follow a unified format in the thesis, as far as the alternation does not affect author’s intention.

c. Gakusei-ga kinoo san-nin hon-o katta.

student-NOM yesterday 3-CL book-ACC bought

‘Three students bought a book yesterday.’

The question here is where an FNQ is allowed to appear. To complicate matters, in Japanese, NQs are not the sole element that loiters about; the Japanese language tolerates relatively free word orders, as shown in (2). A syntactic operation called scrambling moves elements in the sentence, altering the base SOV word order (Saito 1985), to its variants.

(2) a. Gakusei-ga eki de hon-o katta.

student-NOM station at book-ACC bought

‘A student bought a book at the station.’

b. Hon-o gakusei-ga eki-de katta.

c. Eki-de gakusei-ga hon-o katta.

I discuss an asymmetry between the subject and object with respect to the distribution of FNQs and scrambling as in (3). The object may not intervene in the subject-FNQ chain, but not vice versa; the subject can intervene in the object-FNQ chain. The same restriction is observed in the case of adjuncts being between an NP and its FNQ. I also go into pragmatic and prosodic factors, which enable an FNQ to circumvent the restriction. To explain the distribution, the claim is posited that adjuncts can be classified into two groups in terms of the derivation and scramble-ability.

(3) a. *Gakusei-ga kinoo hon-o san-nin katta.

student-NOM yesterday book-ACC 3-CL-NOM bought

Intended: ‘Three students bought a book yesterday.’

b. San-satu gakusei-ga kinoo hon-o katta.

3-CL-ACC student-NOM yesterday book-ACC bought

‘A student bought three books yesterday.’

Another case in which FNQs behave exceptionally is a passive and unaccusative sentence, in which the surface subject is base-generated in the object position. I show, however, that a subject-associated FNQ in fact may not occupy the object position. Another topic on syntactic properties is scrambling of NQs, i.e., what I call a ‘defective’ A-movement, which shows some, but not all, of the features of an A-movement.

What moreover makes FNQs worth studying is the fact that the sentences in (1) have quite similar meanings. The thing is, however, that they are not entirely identical. The question here is how different they are. I pick up some semantic properties of FNQs: distributivity, (non-) specificity, and partitivity. Moreover, I explore how relative scopes affect or are affected by FNQs, and demonstrate that FNQs block semantic phenomena such as Quantifier raising and scrambling effect.

Through an attempt to reveal the syntactic and semantic properties of FNQs, I identify NQs that are not likely to fit into the properties of FNQs. First, an NQ that is in the preverbal position allows a non-distributive or collective reading. This type of NQs, what I call manner adverbial NQs, are also different than FNQs with other semantic properties mentioned above. Second, another type of non-floating NQs is one that has a

wide scope in the sentence-initial position. I contrast scrambled FNQs and this type of NQs, what I call topical adverbial NQs.

0.2. Terminology

Before entering into discussions of FNQs, I clarify the terminology and some of the abbreviations, which are used in the present thesis. Since the structure of nominal phrases containing (numeral) quantifiers is beyond the focus of the thesis, Noun Phrase (NP) is employed to indicate any nominal phrases, including NP, Determiner Phrase (DP), Quantifier Phrase (QP), Number Phrase (NumP), and their varieties in the literature (Kitahara 1993, Kawashima 1998, Watanabe 2006, 2008, and Ochi 2012). Following Miyagawa (1989), Case particles are attached outside the syntax, and are included in an NP, while a postposition belongs to an independent category, and forms a Postpositional Phrase (PP), following an NP as its complement.

A Numeral Quantifier (NQ) consists of a number and a classifier (CL), the latter of which agrees with the type of the noun phrase which an NQ modifies. For instance, *nin* is used to quantify people as in (4a), but not with non-human entities (4b).² I do not specify any syntactic category for NQs

² In the cases of one person and two, *hitori* ‘one person’ and *hutari* ‘two persons’ are used respectively, in both of which numbers and classifiers are morphologically merged to diminish their clear boundaries. In this thesis, however, I gloss them as 1-CL and 2-CL.

(4) a. san-nin no gakusei

3-CL of student

‘three student’

b. *san-nin no neko

cf. san-hiki no neko

3-CL of cat

3-CL of cat

Intended: ‘three cats’

‘three cats’

A host (NP) is an NP which is associated with a quantifier, e.g., *gakusei* ‘student’ in (4a) is the host of the numeral quantifier *3-nin* (3-CL). When a host NP structurally contains a quantifier, the NP is called Q-NP. Not only may an NQ appear to the right of the host, with a connector *no* ‘of’ (5a), but also it may follow the Case particle (5b). As is shown in the next chapter, the NQ in (5b) is part of the NP, rather than structurally extracted from the NP.

(5) a. san-dai no kuruma-ga

3-CL of car-NOM

‘three cars’

b. kuruma-ga san-dai

Meanwhile, an FNQ is used to label an NQ which is separated prosodically and structurally from the host. In chapter 1, I demonstrate that an FNQ has a close structural relation with the host NP at an earlier stage of the sentence derivation. Bear in mind that the terms *float* and *extract* are used without any implication for the derivation or

structure, e.g. *a quantifier floats out of the NP*, or *a quantifier is extracted from the NP* does not mean that the quantifier moves. These terms simply indicate that an NQ is structurally separated from the NP it modifies.

0.3. Methodology

The grammaticality judgments of sentences in this thesis are mainly based on author's intuition as a native speaker although it is confirmed that the judgments are roughly followed by other native speakers.

0.4. An outline of the thesis

This thesis is organized as follows. Chapter 1 and 2 discuss the syntax and semantics, respectively, of FNQs in Japanese. Chapter 3 and 4 introduce adverbial NQs, which cannot be accounted for by syntactic and semantic features of FNQs mentioned in previous chapters. Chapter 3 deals with manner adverbial NQs. Chapter 4 provides an account of topical adverbial NQs. Chapter 5 consists of concluding remarks.

1. SYNTAX

1.1. Derivation

The sentences in (6) illustrate the various locations in which an NQ associated with the subject may appear.

- (6) a. San-nin no gakusei-ga kinoo ano mise-de hon-o kat-ta.
3-CL of student-NOM yesterday that store-at book-ACC bought
'Three students bought the book at that store.'
- b. San-nin gakusei-ga kinoo ano mise-de hon-o kat-ta.
3-CL student-NOM yesterday that store-at book-ACC bought
'Three students bought the book at that store.'
- c. Gakusei-ga san-nin kinoo ano mise-de hon-o kat-ta.
- d. Gakusei-ga kinoo san-nin ano mise-de hon-o kat-ta.
- e. ?Gakusei-ga kinoo ano mise-de san-nin hon-o kat-ta.
- f. *Gakusei-ga kinoo ano mise-de hon-o san-nin kat-ta.
- g. *Gakusei-ga kinoo ano mise-de hon-o kat-ta san-nin.

These positions are divided into three groups: inside the Q-NP (6a), following the host NP (6c, d, e), and preceding the host NP (6b). *3-nin no* (3-CL of) functions as an adjectival modifier, and joins structurally to the NP. I explore in the next subsection that a sequence of an NQ immediately following the host NP, which I call an NP-NQ, is also the case of

Q-NP. An NQ, following the host NP, except an NP-NQ, is an FNQ, and one preceding the host is a scrambled FNQ. (6) also shows that it is less acceptable that NQs appear after VP-internal elements (6e, f, g).³ For ease of exposition, the sentences in (6) are integrated into one sentence as in (7). ‘^’ stands for the possible landing sites of the FNQ, *san-nin* or *san-satu*, while ‘*’ stands for illegitimate places.

- (7) ^ (San-nin-no) gakusei-ga ^ kinoo ^ ano mise-de ? hon-o * kat-ta *
 3-CL-of student-NOM yesterday that store-at book-ACC bought
 ‘Three students bought the book at that store.’

The distributions of NQs associated with the object are illustrated in (8): (8a) shows the object in the base position; (8b) shows the scrambled object. These locations can be classified into the same three groups as the subject NQ. In this section, I provide a description for the derivation of each form.

- (8) a. ^ Gakusei-ga ^ kinoo ^ ano mise-de ^ (san-satu no) hon-o ^ kat-ta *
 student-NOM yesterday that store-at 3-CL-of book-ACC bought
 ‘The student bought three books at that store.’
 b. ^ (San-satu no) hon-o ^ gakusei-ga ^ kinoo ^ ano mise-de ^ t_j kat-ta *
 3-CL-of book-ACC student-NOM yesterday that store-at bought
 ‘Three students bought the book at that store.’

³ Putting a pause before an NQ improves the sentence. I discuss this in the next section.

1.1.1. NP-NQ

I begin with the NP-NQ case. (7) and (8) not only show that an NQ may appear to the left of the host, with a connector *no* ‘of’, but also that it follows the Case particle. Kamio (1983), Kawashima (1998), Watanabe (2006, 2008), and Nakanishi (2008), claim that an NP-NQ forms a single constituent, based on the data as in (9) and (10) on coordination and pseudo-clefting. Since the NP-NQ can be coordinated with an NQ-*no*-NP and be pseudo-clefted, NQ-NP, as well as NQ-*no*-NP, is supposed to form a single constituent.

(9) [Tuukounin-ga san-nin to hitori no yakuza-ga] kenkasita

passer-by-NOM 3-CL and 1-CL of gangster-NOM fought

‘Three passers-by and a gangster fought.’

Kamio (1983:94)

(10) Gakusei-ga katta-no-wa [hon-o san-satu] da

student-NOM bought-that-TOP book-ACC 3-CL COPULA

‘It is three books that a student bought.’

Kawashima (1998:3)

Given this, the NP-NQ sequence as in (11) is ambiguous regarding whether the NQ *san-nin* (3-CL) is inside or outside the NP: If it is included in the NP, it is part of the Q-NP; if it is outside the NP, it is an FNQ. Hence, in order to ensure that a given NQ is an FNQ, being extracted from the NP, a time adverb, e.g., *kinoo* ‘yesterday’ as in (12), or a pause (notated as ‘//’) as in (13) can be inserted between the host and the NQ.

- (11) Gakusei-ga san-nin sake-o nondeiru
 student-NOM 3-CL sake-ACC drinking
 ‘Three students are drinking sake.’ Saito (1985:51)
- (12) Gakusei-ga kinoo hutari waratta
 student-NOM yesterday 2-CL laughed
 ‘Two students laughed yesterday.’ Fitzpatrick (2006:101, modified)
- (13) Gakusei-ga /// gonin tukue-o motiageta
 student-NOM 5-CL desk-ACC lifted
 ‘Five students lifted the desk’ Nakanishi (2008:308)

It is widely assumed that putting a time adverb between the host and an NQ forces them to be divided structurally. This conclusion is not universally accepted, because (14) and (15), in which NP-NQs being intervened by an adverb are coordinated or pseudo-clefted, respectively, sound acceptable.

- (14) ?John-ga [hon-o kinoo san-satu] to [DVD-o kyoo
 John-NOM book-ACC yesterday 3-CL and DVD-ACC today
 ni-mai] katta
 2-CL bought
 ‘John bought three books yesterday, and two DVDs today.’
- (15) ??John-ga katta-no-wa [hon-o kinoo san-satu] da
 John-NOM bought-that-TOP book-ACC yesterday 3-CL COPULA
 Lit: ‘It is three books yesterday that a student bought.’

Inoue (1978) notes that more than one element can be coordinated in Japanese as in (16) and, for this reason, she doubts the constituency of an NP-NQ sequence. It turns out that (9) and (10), and (14) and (15) do not necessarily indicate a single structure of NP-(Adv)-NQ.

- (16) Kato-san-wa, eibun-taipu-o syuu-ni 2/3kai, sosite
 Ms. Kato-TOP article.in.English-ACC week-per 2/3 times and
 wabun-taipu-o tokitama hisho-ni utaseru
 article.in.Japanese-ACC sometimes secretary-DAT type-CAUS-PRES
 ‘Ms. Kato asked her secretary to type articles in English two or three times a
 week, and sometimes to type articles in Japanese.’ Inoue (1986:186)

Koizumi (2000) assumes that a conjunction in which non-constituents are coordinated as in (16) is actually a conjunct of TPs, and sustains the restriction that only one element can be coordinated. Meanwhile, (17) shows that it is not allowed to coordinate phrases that each contain different types of adverbs, whereas adverbials, which contrasts with each other, may be arranged in coordination, e.g., *kinoo* ‘yesterday’ should be a contrastive focus, implying that it was yesterday, not today or the other day. The example (17) challenges Koizumi’s proposal.

Past theories on this topic vary in the location the subject originally occupies and in whether or not the subject moves out of the VP. However, I assume the structure as in (18) as the derivation of sentences, following Miyagawa (2001).

- (18) a. [TP [_{VP} gakusei-ga [_{VP} hon-o kat]]-ta]
 student-NOM book-ACC buy PAST
 ‘The students bought a book.’
 b. [TP gakusei-ga [_{VP} _____ *t*_{NOM} _____] [_{VP} hon-o kat]]-ta]

(18) illustrates that the subject is base-generated in the Spec,vP position, and then may be raised up to the Spec,TP position to fulfill the EPP, a requirement of T that ‘one DP must move into Spec,TP’ (Miyagawa 2001:299).

In Japanese, however, an element which satisfies the EPP need not be the subject. As a result, the Japanese language allows the object to fulfill the EPP, the subject being in-situ in Spec,vP (Kuroda 1988, Miyagawa 2001, 2010), as shown in (19). Analyses on the structure and derivation of (19) will be discussed in the later section.

- (19) [TP hon-o [vP gakusei-ga [vP t_{ACC} kat]]-ta]

1.1.2.2. Adverbial view

Inoue (1978), Alam (1997), and Nakanishi (2007, 2008), claim that an FNQ is base-generated in the surface position as an adverbial, and it does not have a structural

correlation with the host NP. This approach appoints different mechanisms for the sentence with an FNQ (20b) and for the non-floating variant (20a).

- (20) a. [TP [NP gakusei-ga san-nin] [VP t_{NOM} [VP sake-o non]]-deiru]
 b. [TP [NP gakusei-ga] [VP san-nin [VP t_{NOM} [VP sake-o non]]]-deiru]

Although it varies among theories how the FNQ quantifies its host, the question is how to explain that sentences in (20) have almost identical meanings even though the NQs structurally behave differently. For instance, Nakanishi assumes that an NQ in Q-NP (20a) is an adjectival modifier, which quantifies the host NP internally, while the FNQ in (20b) is an adverbial modifier, which quantifies an event denoted by VP. Nakanishi (2008) suggests that an FNQ behaves in a similar way to so-called subject-oriented adverb, in that it modifies both an NP and a verbal predicate; an FNQ quantifies over the event and the host NP. Distribution of FNQs is not fully accounted for with the adverb view (or with the stranding view), but it is assumed that an FNQ must follow the locality constraint, which requires an NQ to be close enough to have a structural relation, e.g., constituent, in a stage of sentence derivation (Nakanishi 2007, Doetjes 1997 for French and Bobaljik 2003 for English).

1.1.2.3. Stranding view

Given VPISH and the EPP-movement, some locations of FNQs associated with the subject are explained. Fitzpatrick (2006), Miyagawa and Arikawa (2007), and

Watanabe (2008) postulate the derivation of FNQ constructions as in (21); the host NP is extracted from Q-NP, which is base-generated in Spec,vP, and moves up to Spec,TP, stranding the NQ behind in Spec,vP.

- (21) a. [_{TP} [_{VP} san-nin (no) gakusei-ga [_{VP} hon-o kat]]-ta]
 3-CL of student-NOM book-ACC buy PAST
 ‘Three students bought a book.’

- b. [TP gakusei-ga [VP san-nin (no) *t_{NOM}* [VP hon-o kat]]-ta]

In addition, the assumption is consistent with the distribution that the subject host may not be modified by an FNQ across VP internal elements. (22) shows that verb, objects and a manner adverb cannot intervene between the subject and the FNQ, since the subject is not likely to form a constituent with VP internal elements in any stage of the derivation.

- (22) Gakusei-ga ^ kinoo ^ t_{NOM} ano mise-de ? hon-o * kat-ta *
 student-NOM yesterday that store-at book-ACC bought
 ‘Three students bought the book at that store.’

The one thing that we should note here is that, in the cases of direct passives and unaccusatives as in (23) and (24), respectively, an NQ may appear in the position following VP-internal elements. In these constructions, the surface subjects of the sentences are base-generated in the VP-internal position as described in (25).

- (23) Yuube, kuruma-ga doroboo ni ni-dai nusum-are-ta.
 last.night cars-NOM thief by 2-CL steal-PASS-PAST
 ‘Last night, two cars were stolen by a thief.’ Miyagawa (1989:38)
- (24) Doa-ga kono kagi de hutatu aita.
 door-NOM this key with 2-CL opened
 ‘Two doors opened with this key.’ Miyagawa (1989:43)
- (25) a. [TP yuube [TP kuruma-ga [VP [VP doroboo-ni [t_{NOM} ni-dai nusum]]-are]-ta]]
 (= 23)
 b. [TP doa-ga [VP [VP kono kagi de [t_{NOM} hutatu ai]]-ta] (= 24)

In a similar way as the subject, an NQ being stranded by the host NP accounts for the derivation of an FNQ related to the object as in (26) and (27). If the object host is scrambled away, being extracted from a Q-NP, then the NQ is left behind in the object position. (28) demonstrates the underlying structures of the sentences in (26) and (27).

- (26) John-ga sake o san-bon mottekita
 John-NOM sake-ACC 3-CL came.with
 ‘John came with three bottles of sake.’ Saito (1985:51)
- (27) Sake-o John-ga san-bon mottekita
 sake-ACC John-NOM 3-CL came.with
 ‘John came with three bottles of sake.’ Saito (1985:52)

- (28) a. [TP John-ga [vP sake-o [vP t_{NOM} [t_{ACC} san-bon motteki]]-ta]] (= 26)
 b. [TP Sake-o [TP John-ga [vP t_{NOM} [t_{ACC} san-bon ai]]-ta] (= 27)

In this thesis, I follow the stranding view simply for the ease of exposition. However, these two views essentially do not differ, insomuch as the host and FNQ should hold the locality relation.

1.1.3. Scrambling

As mentioned above, scrambling is crucial to the derivation of an FNQ stranded by the object host (and also by the subject host as I discuss here). Therefore, I briefly overview the major syntactic properties of scrambling. Following Saito (1992) and Yamashita (2001), scrambling is grouped into three types in terms of which edge the scrambled element is adjoined to: short scrambling adjoins to vP (29); medial scrambling adjoins to TP (30); long scrambling crosses a clause boundary (31).

- (29) Osamu-ga Hiroshi-o Misa-ni t_j syookai-shita
 Osamu-_{NOM} Hiroshi-_{ACC} Misa-_{DAT} introduced
 ‘Osamu introduced Hiroshi to Misa.’ Yatsuhshiro (2003:141)
- (30) [TP [Sono hon-o]_j [TP Taro-ga [vP t_j katta]]
 that book-_{ACC} Taro-_{NOM} bought
 ‘Taro bought that book.’ Saito (1992:70)

- (31) [TP [Sono hon-o]_i] [TP Hanako-ga [CP [TP Taro-ga [vP *t_j* katta]]]
 that book-ACC Hanako-NOM Taro-NOM bought
 to] omotteiru]]
 that think
 ‘Hanako thinks that Taro bought that book.’ Saito (1992:70)

In addition, following Miyagawa (2001), I include in medial scrambling the movement of the subject or object to Spec,TP, the movement which is driven by the EPP feature. In this subsection, I introduce medial and short scrambling. Scrambling involving FNQs is discussed in the next section.

1.1.3.1. Medial scrambling

Saito (1985, 1992) observes that medial scrambling can be an A or A’ movement based on data of an reciprocal pronoun *otagai* ‘each other’;

- (32) a. ?*Otagai_i no sensei-ga karera_i-o hihansita
 each.other of teacher-NOM they-ACC criticized
 ‘Each other’s teacher criticized them.’
 b. ?Karera_i-o [otagai no sensei-ga *t_i* hihansita]
 they-ACC each.other of teacher-NOM criticized
 ‘Them, each other’s teacher criticized.’ Saito (1992:74-75)

The example (32) illustrates that the scrambled object may land on a position, from which an antecedent A-binds its anaphor, so that it satisfies Condition A of Binding Theory (Chomsky 1981); the fact that the scrambled object *karera* ‘they’ binds the anaphor *otagai* ‘each other’ and that scrambling of the object ameliorates the sentence, can lead us to the assumption that the scrambled object is located in an A-position.

Meanwhile, Saito (1985) also claims the availability of A’-movement as scrambling by showing the behaviors of an anaphor *zibunzishin* ‘oneself’;

(33) Zibun-zishin-o [Hanako-ga t_i hihansita].

self-ACC Hanako-NOM criticized

‘Herself, Hanako criticized’

Saito (1992:76)

(33) shows that scrambling brings the object to an A’-position; if the scrambled object *zibun-zishin* ‘self’ is in an A-position, it turns out that a referential expression *Hanako* is A-bound, violating Condition C of Binding Theory. Instead, *zibun-zishin* is reconstructed in the base-generated position so that it obeys Condition A, being A-bound by its antecedent *Hanako*.

In Japanese, an element undergoing an A-movement is interpreted in the surface position, whereas one undergoing A’-movement is reconstructed to the pre-scrambled, namely, the original position (Miyagawa and Arikawa 2007). (34) shows the change of scope relations.

- (34) a. San-nin no gakusei-ga hutari no sensei-o tataita
 3-CL of student-NOM 2-CL of teacher-ACC hit
 ‘Three students hit two teachers.’ $3 > 2, *2 > 3$
- b. Hutari no sensei-o 3-nin no gakusei-ga t_{ACC} tataita. $3 > 2, 2 > 3$

The fact that the scrambled object may or may not be reconstructed in (34) can be accounted for by assuming that the object undergoes either A- or A’- scrambling.⁵ (34a) shows that when the object is in the base position, the scope relations follow the surface word order. The subject scopes over the object (described as $3 > 2$), but not vice versa (described as $*2 > 3$). On the other hand, the scrambled variant (34b) allows both scope

⁵ An analysis for scope relations between non-numeral quantifiers, *dareka* ‘someone’ and *daremo* ‘everyone’, reveals a different result.

- (i) Dareka-ga daremo-o mita.
 someone-NOM everyone-ACC saw
 ‘Someone saw everyone.’ Miyagawa (1997:11)

The sentence (i) or its variants is judged ambiguous with respect to scope relations between them, in Kuno (1973), and Kuno, Takami, and Wu (1999), whereas unambiguous in Miyagawa (1997), Yamashita (2001), Mihara and Hiraiwa (2006), and Miyagawa and Arikawa (2007). Miyagawa (1997) considers a ditransitive variant as in (ii) to be ambiguous contrary to (i).

- (ii) Hanako-ga dareka-ni daremo-o syookaisita.
 Hanako-NOM someone-DAT everyone-ACC introduced
 ‘Hanako introduced everyone to someone.’ Miyagawa (1997:12)

Meanwhile, when the universal and existential quantifiers permute their positions from (i), as in (iii), Kuno, Takami, and Wu (1999) considers it unambiguous, while Mihara and Hiraiwa (2006) find it ambiguous. However, all of the articles above agree with an observation that, when the object is scrambled over the subject, the scope relation changes to be ambiguous.

- (iii) Daremo-ga dareka-o aisiteru.
 everyone-NOM someone-ACC love
 ‘Everyone loves someone.’ Kuno, Takami, and Wu (1999:105)

relations: the subject may take the scope either over or below (described as $2 > 3$) the object.

Interestingly, however, short scrambling, which is uniformly an A-movement, also shows the same effect, as in (35). When an element is A-scrambled across the other element, the A-scrambled element has two options, i.e., whether it is interpreted in the surface position or reconstructed to the pre-scrambled position, even though it is an A-movement. This phenomenon is called the scrambling effect.

- (35) a. John-ga san-nin no onna-ni hutari no otoko-o syookaisita
 John-NOM 3-CL of women-DAT 2-CL of men-ACC introduced
 ‘John introduced, to 3 women, 2 men.’ $3 > 2, *2 > 3$
- b. John-ga hutari no otoko-o san-nin no onna-ni syookaisita
 John-NOM 2-CL of men-ACC 3-CL of women-DAT introduced
 ‘John introduced, to 3 women, 2 men.’ $3 > 2, 2 > 3$
- Hoji (1987:183)

Regarding the landing site of scrambling, I here simply assume that medial scrambling is an EPP-movement or a movement to adjoin to TP, the latter of which can be either A- or A'-position, and that A'-scrambled element is reconstructed in the anaphor interpretation (and also in scope interpretation, as I describe in the next section).

1.1.3.2. Short scrambling

As for short scrambling, the movement itself is at issue. Miyagawa (1997) claims that both word order variations in ditransitives, i.e., IO-DO (36a) and DO-IO (36b), are base-generated, and neither of them is derived through short scrambling from the other.

- (36) a. John-ga Mary-ni pizza-o ageta
 John-NOM Mary-DAT pizza-ACC gave
 ‘John gave Mary pizza’
- b. John-ga pizza-o Mary-ni ageta Miyagawa (1997:1)

Contrary to Miyagawa, Yatsushiro (2003) insists that DO in the latter is scrambled within VP to create the DO-IO word order. Assuming the movement analysis of DO-IO word order, Nemoto (1999) argues that short scrambling is necessarily an A-movement, using Binding Condition tests;

- (37) a. *Masao-ga otagai_i-o [Taroo to Hanako]_i-ni *t_i* syookaisita
 Masao-NOM each.other-ACC [Taroo and Hanako]-DAT introduced
 ‘Masao introduced each other to Taroo and Hanako.’
- b. ?Otagai_i-o [Taroo to Hanako]_i-ga Masao-ni *t_i* syookaisita
 each.other-ACC [Taroo and Hanako]-NOM Masao-DAT introduced
 ‘Each other, Taro and Hanako introduced to Masao.’ Nemoto (199:146)

(37) shows that an anaphoric object cannot be scrambled short-distance to move beyond the antecedent (37a), whereas it may circumvent Condition A and C through medial A'-scrambling across the subject (37b). (38) contradicts her analysis, however.

- (38) *Otagai_i-o Masao-ga [Taroo to Hanako]-ni *t_i* syookaisita.
 each.other-ACC Masao-NOM [Taroo and Hanako]-DAT introduced
 Intended: 'Masao introduced Taroo and Hanako to each other.'

Even if the scrambled object *otagai* 'each other' is reconstructed, and hence the antecedent binds the anaphor, the sentence is unacceptable. I postulate an intermediate movement, applying Miyagawa and Arikawa's (2007) assumption as in (39) that the object stops by Spec,vP, the edge of a phase when it is scrambled to satisfy EPP.⁶

- (39) [TP S [TP O [_{VP} *t_O* [_{VP} *t_S* [_{VP} *t_O* V]_v]]T]]

I extend this assumption to medial scrambling in general. Given this, the structures of (37b) and (38) can be described as (40) ('_{*j*}' stands for coindexation). In both cases, the first movement of the object to vP is an A-movement, and the second one is A'-movement.

⁶ Miyagawa and Arikawa (2007) do not mention why the object may not stay in Spec,vP instead of moving up further. In this paper, I eliminate the intermediate movement of the object.

- (40) a. $[_{TP} \text{ DO}_j [_{TP} \text{ S}_j [_{VP} t_{DO} [_{VP} t_S [_{VP} \text{ IO } t_{DO} \text{ V}]\text{v}]]\text{T}]]$
b. $[_{TP} \text{ DO}_j [_{TP} \text{ S } [_{VP} t_{DO} [_{VP} t_S [_{VP} \text{ IO}_j t_{DO} \text{ V}]\text{v}]]\text{T}]]$

As a result, the scrambled object is interpreted in Spec,vP, which is below the subject and over the dative indirect object. By so doing, the contrast in the acceptabilities in (37b) and (38) can be accounted for. This analysis is supported by an example containing an FNQ;

- (41) a. *Otagai-o gakusei-ga /// hutari Masao-ni *t*_{DO} syookaisita.
each.other-ACC student-NOM 2-CL-NOM Masao-DAT introduced
'Each other, Taro and Hanako introduced to Masao.'
- b. [_{TP} DO_j [_{TP} S_j [_{VP} *t*_{DO} [_{VP} [*t*_S NQ] [_{VP} IO *t*_{DO} V]_v]]T]] (surface)
- c. [_{TP} ~~DO_i~~ [_{TP} S_j [_{VP} DO_j [_{VP} [*t*_S NQ] [_{VP} IO *t*_{DO} V]_v]]T]] (reconstruction)

When the subject is modified by an FNQ, the sentence is not acceptable. Suppose, as I explain in 1.2.6, that the host NP by itself is not capable of being a binder, the subject host does not bind the reconstructed object in Spec,vP, adjoining the stranded NQ, as shown in (41b).

1.1.3.3. Restrictions on scrambling

Although scrambling is not limited to the object, scrambling of other elements is restricted. First of all, since the Japanese language is a strict verb-final language,

scrambling of the verb or verbal predicate is not permitted (42a). Unless elements other than verbal predicates are right-dislocated with certain prosodic and pragmatic consequences (42b), the verb is always at the end of the sentence.

- (42) a. *Osamu-ga syookai-shita_j Hiroshi-o Misa-ni t_j
 Osamu-NOM introduced Hiroshi-ACC Misa-DAT
 Intended: ‘Osamu introduced Hiroshi to Misa.’
 b. Osamu-ga t_j t_k syookai-shita, /// Hiroshi_i-o Misa_k-ni .

Second, Saito (1985) claims that subjects may not be scrambled. In Miyagawa’s (2001) framework, however, the subject may be scrambled (presumably only in a medial distance) either through the EPP-driven movement to Spec,TP, or through optional movement (or focus-driven movement, in his assumption), an A- or A’-movement which takes place following the object EPP-movement. In (43), both the subject and object are A-scrambled above T.

- (43) Hanako_j-ga zibun-zisin_j-mo t_j hihansita.
 Hanako-NOM self-(ACC)-also criticized
 ‘Hanako also criticized herself.’ Miyagawa (2010:69)

First, as for the accusative object, an element to which *mo* ‘also’ is attached is supposed to A-move up to Spec,TP (Miyagawa 2010). The contrast between (44) and (45) indicates

that the accusative object may optionally be scrambled, while the object with *mo* necessarily A-moves.

- (44) San-nin no gakusei-ga ni-satu no hon-o kaw-anakat-ta
 3-CL of student-NOM 2-CL of book-ACC buy-NEG-PAST
 ‘Three students did not buy two books.’ $3 > 2 > NEG, 3 > NEG > 2$
- (45) San-nin no gakusei-ga hon-mo kaw-anakat-ta
 3-CL of student-NOM book-(ACC)-also buy-NEG-PAST
 ‘A book is one of the things that three students did not buy.’
 $3 > also > NEG, *3 > NEG > also$

Second, only A-moved elements can function as a binder. Given that *zibun-zisin-mo* ‘also oneself’ in (43) is in Spec,TP, the subject should also A-move beyond the object with *mo*.

Based on this assumption, in (46), both the subject and the object should A-move one after another, as illustrated in (47). Namely, *mo* moves the object to Spec,TP, and as a result, it satisfies EPP, and then the subject A-moves beyond the object.⁷

- (46) San-nin no gakusei-ga ni-satu no hon-mo kaw-anakat-ta
 3-CL of student-NOM 2-CL of book-(ACC)-also buy-NEG-PAST
 ‘The two books are one of the things that three students did not buy.’
 $3 > 2, *2 > 3$

⁷ Miyagawa (2010), contra Miyagawa and Arikawa (2007), hypothesizes another functional category above TP, the Spec of which is an A-position (αP in his term). In this paper, I simply describe the positions as multiple Spec positions.

- (47) [TP san-nin no gakusei_j-ga [TP ni-satu no hon_k-mo [NegP [vP t_j [vP t_k kaw]v]
-anakat]-ta]]

There is another sequence to generate the same result. The subject is scrambled to satisfy EPP, then the object is A-scrambled to tuck-in (Richards 1997) below the subject. As Miyagawa (2001) assumes, the former analysis requires the subject and object to be equidistant from T so as for both to be a closest phrase to be attracted by T. Meanwhile, the latter forces us to assume tuck-in movements in Japanese. Crucially, however, only the former is valid when considering (48b), in which the negation takes a scope below the scrambled object and over the subject. It is a reasonable assumption that the subject stays in-situ. Thus, Miyagawa's (2001, 2010) analyses are justified in assuming that the subject can also be scrambled.

- (48) 10-mon no nanndai-o san-nin no gakusei-ga t_{ACC} toka-nakat-ta.
10-CL-ACC of puzzle-ACC 3-CL-NOM of student-NOM solve-NEG-PAST
'Three students did not answer 10 puzzles.'

- a. [TP ACC-10 [TP NOM-3 [vP t_{NOM} [vP t_{ACC}]]-V-v-NEG-T]

$$10 > 3 > NEG$$

- b. [TP ACC-10 [vP NOM-3 [vP t_{ACC}]]-V-v-NEG-T]]

$$10 > NEG > 3$$

Still, Saito's (1985) restriction is supported by (49). Based on the fact that the subject may not take a scope below the scrambled object, we should partially hold the restriction; the subject may not be A'-scrambled.

- (49) a. 3-nin no gakusei-ga 10-mon no nanndai-mo toita.
 3-CL of student-NOM 10-CL of puzzle-(ACC)-also solved
 ‘Three students also solved ten puzzles.’ $3 > 10, *10 > 3$
- b. [TP NOM-3 [TP ACC-10 [VP t_{NOM} [VP t_{ACC}]]-V-v-NEG-T]]

In addition, the series of A-movements as in (49b) show another restriction on the scrambling effect. The derivation wrongly leads us to predict that the object may or may not take a scope over the subject, since it crosses the subject through an A-movement. Here, a restriction on the scrambling effect arises. In the case of multiple A-scramblings, the effect of the object movement is to be vanished.

Lastly, Takano (1998) claims that adjunct elements may not be scrambled. (50) is a case which shows that the adjunct element is necessarily base-generated in the surface position. In the next subsection, I argue that certain types of adjuncts, both PPs and manner adverbs, should be scrambled from the VP-internal base-generated position to TP.

- (50) a. *John-ga soitu_i no heya de subete no gakusei_i-ni Mary-o
 John-NOM he of room in all of student-DAT Mary-ACC
 syookaisita
 introduced
 Intended: ‘John introduced Mary to every student in his/her room’
- b. John-ga subete no gakusei_i-ni soitu_i no heya de *t*_{DAT} Mary-o
 John-NOM all of student-DAT he of room in Mary-ACC
 syookaisita
 introduced
 ‘John introduced Mary to every student in his/her room’ Takano (1998:833)

1.1.4. FNQ scrambling

The last group of locations wherein an NQ may appear is one preceding the host NP (51). In the current analysis, an FNQ is not derived through the movement of an NQ itself, but rather the host NP moves, through checking EPP or scrambling, leaving behind the NQ. The derivation mentioned above is not enough to explain the NQs in (51). As Yamashita (2001) argues, the NQs in (51) should be generated by scrambling FNQs; after an NQ is stranded by the host NP, the NQ is scrambled over the host NP as in (52). The structure and restriction of sentences involving the FNQ scrambling is taken up again in the next subsection.

- (51) a. San-nin gakusei-ga hon-o katta
 3-CL student-NOM book-ACC bought
 ‘A student bought three books’
- b. Gakusei-ga san-satu hon-o katta.
 student-NOM 3-CL book-ACC bought
 ‘A student bought three books’
- c. San-satu gakusei-ga hon-o katta.
 3-CL student-NOM book-ACC bought
 ‘Three student bought books’ Alam (1997:382)
- (52) a. [TP [VP gakusei-ga san-nin [VP hon-o kat]]-ta]
 b. [TP gakusei-ga [VP t_{NOM} san-nin [VP hon-o kat]]-ta]
 c. [TP san-nin [TP gakusei-ga [VP t_{NQ} t_{NOM} [VP hon-o kat]]-ta]]
 (= 51a)

1.2. Distributions and restrictions

1.2.1. Floatability

Since the 1970s, it has been extensively discussed in the literature what regulates the floatability of quantifiers: grammatical relations (Harada 1976, Okutsu 2007), Case (Shibatani 1977), and subcategorization (Inoue 1978, Miyagawa 1989). These theories all share a consensus; a nominative subject and an accusative object may be associated with an FNQ. As for other grammatical relations and Cases, a unified account has not yet been provided. Whereas Harada (1976) posits that only a subject and a direct object can be the

host of an FNQ, Shibatani (1977) points out that not all subjects of sentences may be the host of an FNQ, showing, as in (53), that an NQ may not be linked to a dative subject.⁸

- (53) *Korerano kodomo-tati-ni san-nin eigo-ga waku.
 these child-PL-DAT 3-CL English-NOM understand
 Intended: ‘These three children understand English.’ Shibatani (1977:801)

Shibatani (1977) assumes that grammatical Cases determine whether or not an NP may be modified by an FNQ; nominative and accusative Cases may be associated with an FNQ. In addition, Miyagawa (1989) claims that the association of an FNQ and an NP within a PP is uniformly prohibited as in (54).

- (54) *Kodomo-tati-wa kooen ni futatu itta
 child-PL-TOP park to 2-CL went
 Intended: ‘Children went to two parks.’ Miyagawa (1989:36)

However, Shibatani’s and Miyagawa’s views face counterexamples. First, the Major Subject, which is marked a nominative Case, is not allowed to have a floating NQ as in (55). Second, Inoue (1978) points out that the dative NP in (56) is eligible to be the host of an NQ. Third, NPs within a PP are possible to be associated with an NQ outside

⁸ In Shibatani (1977), and other examples in this subsection, the NP-NQ sequence is considered as the FNQ construction. I have checked the grammatical judgments in the examples to be sustained even when a pause intervened between an NQ and its host NP.

the PP. Although their grammatical judgments vary among speakers, (57) and (58) are more acceptable than (54).

(55) *Daitoshi-ga kinoo mittu sityoo-ga jisyokusita.

big.city-NOM yesterday 3-CL mayor-NOM resigned

Intended: ‘As for three big cities, the mayors resigned as their position.’

(56) Watakusi-wa dantaikyaku-o tomeru yadoya-ni ni/san-ken attemita.

I-TOP group.guests-ACC let.stay inn-DAT 2/3-CL inquired

‘I inquired at two or three inns that let groups of guests stay.’ Inoue (1978:172)

(57) (?)kinoo sinai no depaato de ni-ten kasai-ga atta.

yesterday in.the.city of department.store in 2-CL fire-NOM occurred

‘There occurred fires at two department stores in the city yesterday.’

Okutsu (2007:231)

(58) (?)Boku-wa gantan ni osiego kara go-nin nengajoo-o

I-TOP New Year’s Day on student from 5-CL New Year’s card-ACC

moratta

received

‘I received New Year’s cards from 5 students on New Year’s Day.’

Takami (2001:128)

Inoue (1978) suggests that arguments, but not adjuncts, allow floating quantification. Inoue considers subcategorization to be related to the floatability, and the ‘quasi-object’ to use her term, as well as the subject and direct object, may be the host of

an FNQ. The quasi-object is an NP, like the dative NP in (56), which is not regular direct or indirect object, but is subcategorized by the verb. In her analysis, however, an indirect object like the one in (59) is not subcategorized by the verb, and hence it may not be the host of the FNQ, even though it is an argument.

- (59) *Watakusi-wa kono zisyo-o syoonentati-ni suu-nin puresentosita
 I-TOP this dictionary-ACC boys-to few-CL presented
 ‘I presented this dictionary to a few boys.’ Inoue (1978:29)

Haig (1980) argues against Inoue (1978) that the indirect object in (59) becomes the host of the FNQ, by altering word order as the following:

- (60) (?)Watakusi-wa syoonentati-ni suu-nin kono zisyo-o puresentosita
 I-TOP this boys-to few-CL this dictionary-ACC presented
 ‘I presented this dictionary to a few boys.’ Haig (1980:1067)

When the word order follows the basic order of ditransitive constructions, viz., S-IO-DO, as in (60), it is more acceptable for an NQ to follow the indirect object.

In addition, it should be clarified how to distinguish subcategorization. For example, the PP *kooen ni* ‘to parks’ in (54) is judged as an adjunct since it cannot be modified by the following NQ, even though the NP seems to be an obligatory element required by the predicate *iku* ‘go.’

Thus, the floatability of NQs is not defined by a single factor such as grammatical functions or Case. Furthermore, what affects the behavior of NQs is not limited to these factors. In general, approximate NQs like *2/3 gen* (2 or 3-CL) in (56), or *suu-nin* (few-CL) in (60), improve a sentence (Haig 1980, Akaso 2005, Tanaka 2011), while cardinal NQs as in (61) deteriorate the sentence.

- (61) *Watakusi-wa syoonentati-ni go-nin kono zisyo-o presentosita
 I-TOP this boys-to 5-CL this dictionary-ACC presented
 Intended: ‘I presented this dictionary to five boys.’ (cf. 60)

The complexity of an NP is also related to the acceptability. (57) and (62) show that a modified noun is more broad-minded than a ‘bare’ noun. For these reasons, I test syntactic and semantic properties of FNQs, employing unmodified common nouns and cardinal numeral quantifiers.

- (62) *?Kono mati de-wa kinoo depaato de ni-ten kasai-ga atta.
 this city in-TOP yesterday department.store in 2-CL fire-NOM occurred
 Intended: ‘In this city, there occurred fires at two department stores yesterday.’
 (cf. 57)

1.2.2. Object intervention

An FNQ does not freely appear in any place in the sentence. Saito (1985) observes a subject-object asymmetry with respect to the behavior of an FNQ;

- (63) **Gakusei-ga sake-o san-nin nondeiru.*
student-NOM sake-ACC 3-CL drinking
'Three students are drinking sake.' Saito (1985:52)
- (64) *Sake-o John-ga san-bon t_{ACC} mottekita.*
sake-ACC John-NOM 3-CL came-with
'John came with three bottles of sake.' Saito (1985:52)

In (63), the subject NP *gakusei* 'student' may not be associated with the FNQ when the object NP *sake* 'sake' is in-between. Meanwhile, in (64), the subject John can intervene between the FNQ and the related object *sake*, the latter of which is scrambled beyond the subject to the top of the sentence. Similarly, (65) shows that the dative object is not allowed to occupy the position between the subject and the associated FNQ.

- (65) **Tomodachi-ga Sinzyuku de Tanaka-sensei-ni hutari atta.*
friend-NOM Sinzyuku in Tanaka-prof.-DAT 2-CL met
Intended: 'Two friends met Professor Tanaka in Shinjuku.'
Miyagawa (1989:28)

Second, Naito (1995) claims that the plausibility of the contrasting members makes it more acceptable to put the subject and its NQ with the object inbetween. A ‘contrast’ can be observed in his example (68).

- (68) Kongakki-wa nihonjin-ga watasi no koosu-o hutari zyukoositeiru
this.semester-TOP Japanese-NOM I of course-ACC 2-CL taking
‘This semester, two Japanese are taking my course.’ Naito (1995:221)

According to Naito, (68) evokes a ‘statistical table’ in his terms to contrast *watashi no koosu* ‘my course’ with other courses offered. Similarly, Gunji and Hashida (1998) provide another example, which exhibits the same effect by providing contrasting members;

- (69) ?Gakusei-ga sake-o imamadeni san-nin nonda
student-NOM sake-ACC so.far 3-CL drank
‘Three students so far drank sake.’ Gunji and Hashida (1998:57)

The adverbial *koremadeni* ‘so far’ can be contrasted with something else depending on contexts, e.g, *korekara* ‘from now on.’ The idea that the availability of the contrastive

context ameliorates sentences is proven further by considering a sentence with listing (70).⁹

- (70) Sukauto-ga John-o san-nin, Bob-o go-nin, Ken-o hutari sisatusita
 scout-NOM John-ACC 3-CL Bob-ACC 5-CL Ken-ACC 2-CL visited.
 ‘Three scouts visited John, five did Bob, two did Ken.’

Lastly, Miyagawa and Arikawa (2007) propose a prosodic effect, which enables a subject NQ across the object to be associated with the subject. Miyagawa and Arikawa observe that the ungrammaticality of (63), repeated below, can be attributed to a perceptual tendency that the NQ is likely to modify the object *sake* ‘sake’ next to it rather than the subject *gakusei* ‘student’ beyond the object.

- (63) *Gakusei-ga sake-o san-nin nondeiru.
 student-NOM sake-ACC 3-CL drinking
 ‘Three students are drinking sake.’

⁹ In general, listing improves sentences as the following:

- (i) *Kodomo-tati-wa kooen ni futatu itta
 childr-PL-TOP park to 2-CL went
 Intended: ‘Children went to two parks.’ Miyagawa (1989:36)
 (ii) Kodomotati-wa kooen ni hutatu, doobutuen ni mittu, suizokkan ni yottu itta.
 children-TOP park to 2-CL zoo to 3-CL aquarium to 4-CL went
 ‘Children went to two parks, three zoos, and four aquariums.’

Whereas the NP *kooen* ‘park’ in the PP in (54), repeated here as (i), may not be quantified by the FNQ, it becomes possible if places the children went are listed as in (ii). Hence, we need to bear in mind that apparently contrastable context makes grammaticality obscure or misleading. Also, semantic (and/or cognitive) properties of listing should be explained.

They suggest that putting a pause between the object and the FNQ prevents it from modifying the object, and makes it possible for it to quantify the subject away beyond the object as shown in (71) (a pause is expressed as ‘///’).

- (71) ?Gakusei-ga sake-o /// SAN-NIN nonda
 student-NOM sake-ACC 3-CL drank
 ‘Three students drank sake.’ Miyagawa and Arikawa (2007:651)

Miyagawa and Arikawa moreover assume that the identical account can be applied to other counterexamples; the focus element such as *mo* ‘as many as’ in (67) leads to prominence being put on the NQ; an adverbial as in (69) separates the NQ from the object structurally as well as prosodically.

1.2.3. Object intervention and scrambling

Miyagawa and Arikawa (2007) suggest that (71) is derived through multiple scrambling as the following:

- (72) [TP gakusei-ga [TP sake-o [VP *t*_{NOM} 3-CL [VP *t*_{ACC} V]]]

First, the object moves to Spec,TP to fulfill the EPP feature of T. Next, the subject is scrambled beyond the object. Although this derivation suggests that the FNQ is always

below negation, it is not evident in (73), in which the FNQ takes the wider scope than negation.

- (73) Gakusei-ga zen'in-o hutari mi-nakat-ta
 student-NOM all-ACC 2-CL see-NEG-PAST
 'Two students did not see all.'

all > NEG > 2, ??all > 2 > NEG, 2 > all > NEG

Miyagawa and Arikawa (2007:658)¹⁰

Miyagawa and Arikawa further propose a mechanism in which a series of movements is involved, as in (74); the subject Q-NP moves to satisfy EPP, then the object is A-scrambled to adjoin to TP, and finally the subject host NP is extracted from the Q-NP, stranding the NQ.

- (74) *all > 2 > NEG*

[_{TP} gakusei-ga [_{TP} zen'in-o [_{TP} *t*_{NOM} 2-CL [_{VP} *t*_{NOM-NQ} [_{VP} *t*_{ACC}]]]V-v-NEG-T]]]

1.2.4. Adjunct intervention

Miyagawa (1989) observes that, as well as the object, a phrase inside the VP may not intervene between the subject and associated FNQ.¹¹ In (75) and (76), the NQs may

¹⁰ The grammaticality judgment is added according to the explanation and to my own perception.

¹¹ As discussed in section 1.1.2.3, an FNQ may be associated with the subject across the VP adverb in passives and unaccusatives.

not be associated with the host NP *kodomo* ‘child’ since the manner adverb *geragerato* ‘loudly’ and the PP *kono kagi-de* ‘with this key’, respectively, stays between the NQ and the subject host NP.

- (75) *Kodomo-ga geragerato hutari waratta
child-NOM loudly 2-CL laughed
‘Two children laughed.’ Miyagawa (1989:44)
- (76) *Kodomo-ga kono kagi-de hutari doa-o aketa
children-NOM this key-with 2-CL door-ACC opened
‘Two children opened the door with this key.’ Miyagawa (1989:44)

In the same way as in the cases of object intervention, however, pragmatic and prosodic effects circumvent this restriction. Takami (2001) argues against Miyagawa that a pragmatically salient element may be put on the focus position, which is immediately preceding a verb or verbal phrases. The contrast between the examples above and (77) shows Takami’s points.

- (77) Kodomo-ga butai de zyuu-nin odotta
child-NOM stage at 10-CL danced
‘Ten children danced at the stage.’ Takami (2001:129)

In (77), *butai de* ‘at the stage’ contributes to the meaning of the sentence simply as a scene setter, while *geragerato* ‘loudly’ (75) and *kono kagi-de* ‘with this key’ (76) provide

new information for the action of laughing and of opening the door, respectively. As a result, the former can intervene between the subject and the FNQ, and the latter two cannot. This view is borne out when *butai de* is changed into a prominent place. (78) demonstrates that, as is expected, the national theatre in lieu of a ‘stage’ deteriorates the sentence. Similarly, adding *dake* ‘only’ makes the NQ more focused in the context, as shown in (79).

- (78) *?Kodomo-ga kokuritu gekijoo de zyuu-nin odotta
 children-NOM national theatre at 10-CL danced
 ‘Ten children danced at the national theatre.’
- (79) Kodomo-ga kono kagi-de hutari-dake doa-o aketa
 children-NOM this key-with 2-CL-dake door-ACC opened
 ‘Only two children opened the door with this key.’

Moreover, in the same way as Miyagawa and Arikawa (2007) suggest, a pause enables an FNQ to modify the subject across VP internal adverbials, which is pragmatically salient, as described in (80) and (81). The example (82) shows that, even in (78), a pause improves the sentence, presumably by making the NQ stand out in the context.

- (80) ?Kodomo-ga geragerato /// hutari waratta
 child-NOM loudly 2-CL laughed
 ‘Two children laughed.’ (cf. 75)

- (81) Kodomo-ga kono kagi-de /// hutari doa-o aketa
 children-NOM this key-with 2-CL door-ACC opened
 ‘Two children opened the door with this key.’ (cf. 76)
- (82) ?Kodomo-ga kokuritu gekijoo de /// zyuu-nin odotta
 children-NOM national theatre at 10-CL danced
 ‘Ten children danced at the national theatre.’ (cf. 78)

1.2.5. Adjunct intervention and scrambling

Whatever the motivation is, how the structure of the word order in (83) is derived from the assumed base order (84), should still be accounted for.

- (83) NOM PP/Adv NQ-NOM (ACC) V
- (84) [TP [vP NOM-NQ [vP PP/Adv (OBJ) V] v] T]]

Two possibilities arise: adjuncts are scrambled (contra Takano (1998)) or VP internal adjuncts may be base-generated outside VP (following Miyagawa (1989), and contra (84)). I here suggest both of these options as plausible depending on the types of adverbials. First of all, it is necessary to ensure that the NQ and adjuncts are out of the VP. Suppose, following Nakanishi (2007), that *sae* ‘even’ preposes a VP, then (85) through (87) illustrate that the NQ is outside the VP, and that an adjunct preceding the NQ is also outside the VP.

- (85) [VP kono kagi-de doa-o ake sae]_j kodomo-ga hutari t_j sita
 this key-with door-ACC open even children-NOM 2-CL did
 ‘Even open the door with this key, two children did.’
- (86) *[VP Hutari kono kagi-de doa-o ake sae]_j kodomo-ga t_j sita
 2-CL this key-with door-ACC open even children-NOM did
 Lit: ‘Even open the door with this key two, children did.’
- (87) *[VP Kono kagi-de hutari doa-o ake sae]_j kodomo-ga t_j sita
 this key-with 2-CL door-ACC open even children-NOM did
 Lit: ‘Even open the door two with this key, children did.’

Next, (88) through (91) show the behavior of an NQ in combination with various postpositions.

- (88) Gakusei-ga mit-tu no hanmaa de /// go-nin doa-o kowasita
 student-NOM 3-CL of hammer with 5-CL door-ACC broke
 ‘Five students broke the door with three hammers.’ ?5 > 3, *3 > 5
- (89) Gakusei-ga san-hiki no inu to /// go-nin kooen ni itta
 student-NOM 3-CL of dog with 5-CL park to went
 ‘Five students went to the park with three dogs.’ ?5 > 3, *3 > 5
- (90) Gakusei-ga mit-tu no kyoositu de /// go-nin tukue-o kowasita
 student-NOM 3-CL of classroom in 5-CL desk-ACC broke
 ‘Five students broke a desk in three classrooms’ 5 > 3, ?3 > 5
- (91) Gakusei-ga mit-tu no heya kara /// go-nin isu-o hakonda.

student-NOM 3-CL of room from 5-CL chair-ACC carried

‘Five students carried a chair from three rooms.’ $5 > 3, ?3 > 5$

Instrumental (88) and comitative (89) always take scope below the FNQ, while locative (90) and ablative (91) may or may not take scope over the FNQ. The former two indicates that the PPs are A’-scrambled, and hence, have raised to TP. The latter two seem to show the scrambling effect. The PPs are scrambled from inside VP to TP (or vP) beyond the FNQ. The example in (92) and (93) illustrate, however, that an FNQ blocks the scrambling effect. When the scrambled object moves beyond the subject FNQ, the scope relation does not alter; the object still cannot take a scope wider than the subject, even though it is A-scrambled over the subject (and its FNQ).

(92) San-satu no hon-o gakusei-ga kinoo t_{NOM} hutari t_{ACC+NQ} katta.

3-CL-ACC of book-ACC student-NOM yesterday 2-CL-NOM bought

‘Two students bought three books.’ $*?3 > 2, 2 > 3$

(93) Gakusei-ga kinoo san-satu no hon-o t_{NOM} hutari t_{ACC+NQ} katta.

student-NOM yesterday 3-CL-ACC of book-ACC 2-CL-NOM bought

‘Two students bought three books.’ $*?3 > 2, 2 > 3$

Therefore, it is a reasonable assumption that locative and ablative NPs are either scrambled from VP-internal positions (94a), or base-generated above vP, even though they are manner adverbials (94b).

- (94) a. [TP NOM [TP/vP PP [vP t_{NOM} NQ [VP t_{PP} (ACC) V] v] T]]
- b. [TP NOM [vP PP [vP t_{NOM} NQ [VP (ACC) V] v] T]]

This analysis leads to another issue on scrambling: where and how the PPs land? Are PPs in (94a) A'-vP-scrambled, scrambled to adjoin to TP, checking EPP, or scrambled to tuck-in to the subject? All three possibilities contradict the assumption in the present article: vP-scrambling should be A-movement; it should be a DP that checks EPP; scrambling movement should be adjoining. I leave this puzzle for future work.

As for the derivation of manner adverbs, it seems as in (95) that they are unable to take a wider scope over than FNQs. When the adverb is put before the FNQ with a pause in-between, as in (95), the adverb may be used as a manner adverb. The distribution overlaps with instrumental PPs or comitative PPs. If this observation is on the right track, manner adverbs are also base-generated inside the VP and then A'-scrambled to TP, as illustrated in (96).

- (95) Gakusei-ga subayaku /// san-nin hon-o katta.
 student-NOM quickly 3-CL book-ACC bought
 'Three students bought a book quickly. / *Quickly, three students bought a book.'

- (96) [TP NOM [TP Adv [vP t_{NOM} NQ [VP t_{Adv} (ACC) V] v] T]]

1.2.6. Scrambled host NP

The host NP strands the associated NQ through scrambling, including EPP movement, as in (97). This means the scrambling of the host NP is inevitably an A-movement. The example (98) shows, however, that the object host seems to be incapable of checking EPP.

(97) a. Hon-o gakusei-ga t_{ACC} san-satu katta.

book-_{ACC} student-_{NOM} 3-_{CL} bought

‘A students bought three books.’

b. Gakusei-ga kinoo t_{NOM} san-nin hon-o kat-ta

student-_{NOM} yesterday 3-_{CL} book-_{ACC} bought

‘Three students bought a book yesterday.’

(98) Hon-o yo-nin no gakusei-ga t_{ACC} san-satu kaw-anakat-ta

book-_{ACC} 4-_{CL-NOM} of student-_{NOM} 3-_{CL-ACC} buy-_{NEG-PAST}

‘Four students did not buy three books.’

$4 > 3 > NEG, 4 > NEG > 3, *3 > 4, *NEG > 4$

The fact that the subject does not take a narrower scope than negation indicates that the subject moves up to Spec,TP, and as a result satisfies EPP, unless the object tucks-in beneath the subject that checks EPP.

Also, the host NP can be scrambled short-distance, which is uniformly an A-movement, as in (99). Moreover, (100) shows that the scrambled host NP suppresses a

Weak Crossover (WCO) violation, which can be observed when a variable fails to c-command a pronoun which is coindexed with it.

(99) John-ga hon-o Mary-ni t_{ACC} san-satu agenakatta.

John-NOM book-ACC John-DAT 3-CL-ACC give-NEG-PAST

‘John did not give three books to Mary.’

$3 > NEG, NEG > 3$

(100) a. *[Kinoo pro_j pro_k mita hito_j]-ga san-hiki no nani_k-o

yesterday saw person-NOM 3-CL-ACC of what-ACC

kiratteiru no.

hate QUESTION

Lit: ‘The person who saw (them) yesterday hates three of what?’

b. San-hiki no nani_k-o [kinoo pro_j pro_k mita hito_j]-ga t_{ACC+NQ} kiratteiru-no.

c. Nani_k-o [kinoo pro_j pro_k mita hito_j]-ga [t_{ACC} san-hiki] kiratteiru-no.

On the other hand, the host NP scrambling is not a full-fledged A-movement. First, despite the fact that scope relations tend to reflect the word order, the scrambled host NP cannot contribute to a scope interpretation even when it is A-moved. In (101a), when the object is lower than negation, the subject host is only an element that is higher than negation. Since the host is not counted on as a nominee of a relative scope, the reading of two over negation is not accessible. This is also the case in the object host as well, shown in (101b).

- (101) a. Gakusei-ga ni-satu no hon-o [t_{NOM} san-nin] t_{ACC} kaw-anakat-ta.
 student-_{NOM} 2-_{CL-ACC} of book-_{ACC} 3-_{CL-NOM} buy-_{NEG-PAST}
 ‘Three students did not buy two books’ $*3 > NEG > 2, *3 > 2 > NEG$
- b. Hon-o san-nin no gakusei-ga [t_{ACC} ni-satu] kaw-anakat-ta
 book-_{ACC} 3-_{CL-NOM} of student-_{NOM} 2-_{CL-ACC} buy-_{NEG-PAST}
 ‘Three students did not buy two books’ $*2 > NEG > 3, *2 > 3 > NEG$

Second, (101b) moreover shows that the host NP does not cause the scrambling effect, either. Whereas A-scrambling of a Q-NP, including NP-NQ, causes the scrambling effect as in (102), the host NP alone does not suffice for the scrambling effect.

- (102) {Ni-satu no hon-o / hon-o ni-satu} san-nin no gakusei-ga
 2-_{CL-ACC} of book-_{ACC} book-_{ACC} 2-_{CL-ACC} 3-_{CL-NOM} of student-_{NOM}
 t_{ACC+NQ} kaw-anakat-ta.
 buy-_{NEG-PAST}
 ‘Three students did not buy two books’ $3 > 2 > NEG, 2 > 3 > NEG$

Lastly, (103) indicates that the scrambled host NP does not function as a binder; although the position of the medial-scrambled host NP *gakusei* ‘student’ can be in an A-position, the reciprocal *otagai* ‘each other’ is not successfully A-bound.

- (103) *Gakusei-o otagai no sensei-ga *t*_{ACC} hutari sikatta
 students-_{ACC} each.other of teachers-_{NOM} 2-_{CL} scolded

Lit: ‘Students, each other’s teachers scolded two.’

Bošković & Takahashi (1998:362)

Miyagawa (1997) observes, however, that the host may be a binder in a ditransitive construction (104).

- (104) ?John-ga gakusei-tati_j-o otagai_j no sensei-ni *t*_{ACC} hutari syookaisita.
 John-_{NOM} student-_{PL-ACC} each.other of teacher-_{DAT} 2-_{CL} introduced
 ‘John introduced two students to each other’s teachers’ Miyagawa (1997:8)

I assume, contra Miyagawa, that the NQ *hutari* (2-_{CL}) in (104) is a partitive NQ since a pluralizer *tati* is inconsistent with an FNQ (see sections 2.2 and 2.3). As expected, when *tati* is omitted, the sentence is worse (105).¹²

- (105) *?John-ga gakusei_j-o otagai_j no sensei-ni *t*_{ACC} hutari syookaisita.

Thus, the movement of the host NP shows some properties of an A-movement, but is fairly restricted; it is a ‘defective’ A-movement, so to speak.

¹² Another concern in (102) is that it is likely that four students are introduced to the teachers. In this case, the NQ is a partitive NQ as well.

1.2.7.1. Defective A-movement

(106) a. [_{TP} [_{VP} gakusei-ga san-nin [_{VP} hon-o kat]] -ta]
 student-NOM 3-CL book-ACC buy PAST

b. [_{TP} gakusei-ga [_{VP} *t*_{NOM} san-nin [_{VP} hon-o kat]]-ta]

c. [_{TP} san-nin [_{TP} gakusei-ga [_{VP} *t*_{NOM} *t*_{NO} [_{VP} hon-o kat]]-ta]]

As well as the host NP scrambling, FNQ scrambling also shows some of the properties of an A-movement. First, a scrambled FNQ can scope wider than negation as in (107) and (108).

(107) Gakusei-ga san-satu saiwaini hon-o kawa-nakat-ta
 student-NOM 3-CL fortunately book-ACC buy-NEG-PAST

‘Fortunately, the student did not buy three books.’ $3 > NEG, *NEG > 3$

- (108) Gakusei-ga san-satu ketyonketyonni hon-o hihansi-nakat-ta
 student-NOM 3-CL harshly book-ACC criticize-NEG-PAST
 ‘The student did not criticize three books harshly.’ $3 > NEG$, $*?NEG > 3$

Given that a sentential adverb *saiwaini* ‘fortunately’ adjoins to T, the NQ is supposed to be above T as well. In (108), suppose, following the discussion above, that the manner adverb *ketyonketyonni* ‘harshly’ is A’-scrambled to TP, the NQ is also scrambled to TP. In addition, as the example (109) illustrates, the scrambled FNQ suppresses the WCO violation.

- (109) a. *[Kinoo *pro_j* *pro_k* mita hito_j]-ga san-hiki no nani_k-o
 yesterday saw person-NOM 3-CL-ACC of what-ACC
 kiratteiru no.
 hate QUESTION
 Lit: ‘The person who saw (them) yesterday hates three of what?’
 b. San-hiki no nani_k-o [kinoo *pro_j* *pro_k* mita hito_j]-ga *t_{ACC}* kiratteiru-no.
 c. San-hiki [kinoo *pro_j* *pro_k* mita hito_j]-ga [nani_k-o *t_{NQ}*] kiratteiru-no.

On the other hand, FNQ scrambling cannot be considered as an authentic A-movement. First, (110) shows that FNQ scrambling does not show the scrambling effect.

- (110) Ni-dai, [gakusei-ga san-nin] (kinoo) [kuruma-o t_{NQ}] nusunda.
 2-CL student-NOM 3-CL (yesterday) car-ACC stole
 ‘Three students stole two cars.’ $3 > 2, *2 > 3$ Yamashita (2001:205)

It cannot be scrambled short-distance, either, as in (108). If the manner adverb *ketyonketyonni* ‘harshly’ is not scrambled, Spec,vP should have had another option to land on, and hence, the object FNQ should have taken a scope below negation. The fact that the scrambled FNQ necessarily scope over negation indicates that it cannot be short-scrambled. The same analysis can be applied to scrambling in a ditransitive construction:

- (111) John-ga san-satu Mary-ni hon-o agenakatta.
 John-NOM 3-CL-ACC John-DAT book-ACC give-NEG-PAST
 ‘John did not give three books to Mary.’ $3 > NEG, *NEG > 3$

The example (111) shows that when the FNQ is scrambled across the dative NP, it necessarily takes a scope over negation. It indicates that the scrambled NQ is above T, rather than adjoining to vP.

Moreover, the scrambled FNQ functions neither as a binder as in (112) nor as an EPP-checker as in (113).¹³

¹³ When both the host NP and FNQ are scrambled over an anaphor, ‘split’ binning is possible as following:

- (i) ?Gakusei-o kinoo hutari otagai no sensei-ga t_{ACC} t_{NQ} hihansita.
 student-ACC yesterday 2-CL-ACC each.other of teacher-NOM criticized
 ‘Each other’s teacher criticized two students.’

- (112) *Hutari otagai no sensei-ga gakusei-o t_{NQ} sikatta
 2-CL-ACC each.other of teachers-NOM students-ACC scolded

Intended: ‘The teachers of each other scolded two students.’

- (113) Ni-satu san-nin no gakusei-ga hon-o t_{NQ} kaw-anakat-ta
 2-CL-ACC 3-CL-NOM of student-NOM book-ACC buy-NEG-PAST

‘Three students did not buy two books’

$*2 > NEG > 3$

When the subject takes a scope below negation, the object FNQ is the only candidate for satisfying EPP, and by so doing, it should take a scope over negation and the subject; $2 > NEG > 3$. The fact that this scope relation is not achieved suggests that the scrambled FNQ is not at Spec,TP to fulfill EPP.

Thus, NQ scrambling is a ‘defective’ A-movement in that it only partially shows the properties of an A-movement. The possible effects or functions in the cases of host NP scrambling and of NQ scrambling are summarized in (114).¹⁴

¹⁴ See section 2.5.4 about an instrumental subject, which I assume A’-moves to satisfy EPP, and about the scope of negation against A’-moved element.

(114) A-, A'- and defective A-movements

(ok: available, *: unavailable)

	Host NP scrambling	NQ scrambling	A-movement	A'-movement
Short scrambling	ok	*	ok	*
EPP checking	subject: ok object: *	*	ok	*
Scoping against negation	*	ok	ok	*
WCO suppression	ok	ok	ok	*
Scrambling effect	*	*	ok	*
Binder	*	*	ok	*

1.2.7.2. Object NQ scrambling

One remaining puzzle is the derivation of scrambling of the object NQ in (115). In which position does the NQ land? Similarly to scrambled PPs as in (93), none of the hypothesized scenarios is promising in the present analysis: the NQ moves to Spec,vP; the NQ checks EPP; or the NQ tucks in to the subject.

- (115) a. [TP [_{VP} gakusei-ga [_{VP} hon-o san-satu kat]] -ta]
 student-NOM book-ACC 3-CL buy PAST
 ‘The student bought three books.’
 b. [TP gakusei-ga [_{VP} hon-o [_{VP} *t*_{NOM} [_{VP} *t*_{ACC} san-satu kat]]-ta]
 c. [TP gakusei-ga [_{?P} san-satu [_{VP} hon-o [_{VP} *t*_{NOM} [_{VP} kat]]]-ta]] (= 44b)

Despite the mystery of the landing sites, an object FNQ is scrambled to several locations relatively freely as in (116) through (118); TP, T beyond a sentential adverb, and vP beyond the indirect object. Whether or not object NQs may move does not so much depend on syntactic constraints as on types of verbal predicates. In the case of objects, the scramble-ability of an FNQ can be equated with the floatability of the NQ (see section 2.4).

- (116) Ni-mai akanboo-ga sara-o t_{NQ} watta
 2-CL baby-NOM plate-ACC broke
 ‘The baby broke two plates.’ Miyagawa (1989:62)
- (117) ?Akanboo-ga ni-mai huunni sara-o t_{NQ} watta
 baby-NOM 2-CL unfortunately plate-ACC broke
 ‘Unfortunately, the baby broke two plates.’
- (118) John-ga hutari onna-ni otoko-o t_{NQ} syookaisita
 John-NOM 2-CL-ACC woman-DAT man-ACC introduced
 ‘John introduced two men to a woman’

1.2.7.3. Subject NQ scrambling

Miyagawa (1989) observes that a subject NQ may not be scrambled across anything from VP-internal positions, including direct objects (119a), indirect objects (119b), and adjunct PPs (119c).

- (119) a. ?*Hutari hon-o gakusei-ga katta
 2-CL-NOM book-ACC student-NOM bought
 Intended: ‘Two students bought a book.’
- b. *Hutari_k Tanaka-san-ni gakusei-ga t_k omiyage-o ageta
 2-CL-NOM Tanaka.Mr.-DAT student-NOM present-ACC gave
 Intended: ‘Two students gave Mr. Tanaka a present’
- c. ?*Hutari_k naihu de kodomo-ga t_k roopu-o kitta
 2-CL-NOM knife by children-NOM rope-ACC cut
 Intended: ‘Two children cut the rope with a knife.’ Miyagawa (1989:50-51)

However, the restriction of scrambling of subject FNQs does not always hold; a time adverb can intervene between the subject and the NQ;

- (120) Hutari kyoo gakusei-ga nihongo no hon-o katta
 2-CL-NOM today student-NOM Japanese of book-ACC bought
 ‘Today two students bought Japanese language books.’ Miyagawa (1989:51)

Furthermore, focusing particles (121) and appropriate context (122) improve the sentences, as well as in the cases of object intervention. When the NQ, and presumably

also the subject itself, are salient in the context, the NQ is allowed to appear in the sentence-initial position.¹⁵

- (121) ?Zjuu-nin-mo hon-o gakusei-ga katta
 10-CL-as.many.as book-ACC student-NOM bought

‘As many as ten students bought a book.’

- (122) Hutari homerun-o picher-ga uttta
 2-CL homerun-ACC pitcher-NOM hit

‘Two pitchers hit homeruns.’

In addition, the examples as in (123) and (124) show that passives and unaccusatives allow a subject NQ to be scrambled across VP internal elements since the subject and NQ are both base-generated inside VP.

- (123) Yuube, ni-dai doroboo ni kuruma-ga nusum-are-ta.
 last.night 2-CL-NOM thief by cars-NOM steal-PASS-PAST

‘Last night, two cars were stolen by a thief.’

Miyagawa (1989:38)

- (124) Huta-tu kono kagi de doa-ga aita.
 2-CL-NOM this key with door-NOM open

Lit: ‘Two_j, with this key, (t_j) doors opened.’

Miyagawa (1989:52)

¹⁵ As for (120), either the subject or NQ does not sound more focused. As mentioned in 1.1.1, it worth exploring whether a time adverb such as *kinoo* ‘yesterday’ may be structurally contained in a larger NP, if it is used to make the NP or NQ contrastive.

Multiple scrambling is necessary to derive a passive or unaccusative sentence in which a VP-internal element intervenes between the scrambled subject FNQs and the subject host, as illustrated in (125).

(125) [TP hutatu [TP kono kagi de [TP doa-ga [vP [VP t_{PP} [t_{NOM} t_{NQ} ai]]]-ta]]] (= 111)

First, the subject, leaving behind the NQ inside the VP, moves up to Spec,TP to satisfy EPP, then the adjunct PP is scrambled to adjoin to TP, and finally the stranded NQ is scrambled to the top of the sentence.

Given this series of scrambling, scrambling of subject FNQs should have been accounted for in the same way, as in (126). Thus, the restriction of subject FNQ scrambling stems from semantic or pragmatic constraints.

(126) [TP hutari [TP naihu de [TP kodomo-ga [vP t_{NOM} t_{NQ} [VP t_{PP} [roopu-o kit]]]-ta]]] (= 119c)

1.2.8. Stranded in the base-generated positions

It is commonly assumed in the literature, and in this thesis so far, that intervention effects are circumvented in passives and unaccusatives, since the subject is base-generated in the object position, as shown in (123) and (124) above. At first sight, this distribution of an FNQ in Japanese seems to contrast with English as in (127).

(127) a. The students_i have arrived (*all) t_i.

b. The students_i were seen (*all) t_i.

Bobaljik (2003:117)

This is not the case, however. It can be shown that in Japanese as well as in English an NQ may not be stranded through (some types of) A-movements. First, see the example below:

(128) Gakusei-ga yorokonde t_{NOM} ke-rare-ta

student-NOM joyfully kick-PASS-PAST

‘The student were joyfully kicked.’

In (126), *yorokonde* ‘joyfully’ is ambiguous in terms of whether it modifies the smaller vP/VP or the larger vP: in the former case, it is someone who kicked that had joy; in the latter case, it is the student that had joy.

On the other hand, the former meaning vanishes when the NQ is stranded by the subject, as in (129). It indicates that *yorokonde* may not appear in the smaller vP/VP, and I assume that the distribution of manner adverb in (129) can be accounted for if the FNQ is outside the smaller vP, leaving the base position, as in (130).

(129) Gakusei-ga yorokonde t_{NOM} san-nin ke-rare-ta

student-NOM joyfully 3-CL kick-PASS-PAST

‘Three students were joyfully kicked.’

- (130) [TP gakusei-ga [vP(PASS) yorokonde [vP *t*_{NOM} san-nin [vP (*yorokonde) *t*_{NOM-NQ} ke
]]-rare]-ta]

As expected, when the NQ precedes the manner adverb, the ambiguity reappears. If the FNQ is stranded at the Spec of the higher vP, then the manner adverb can be generated to modify the higher vP, viz. the passive morpheme, or to modify the action itself.¹⁶

- (131) Gakusei-ga kinoo san-nin yorokonde *t*_{NOM} ke-rare-ta
 student-NOM yesterday 3-CL joyfully kick-PASS-PAST
 ‘Three students are joyfully kicked yesterday.’

The claim that an FNQ in passives is outside vP is also proven by the behaviors of VP-internal PPs. If the FNQ is stranded in the ‘object’ position in the VP, then it should scope below both instrumental and locative PPs. This is not borne out, however, as in (132); an instrumental PP may not take a wider scope than the FNQ. Meanwhile, a locative PP may take a wider scope as in (133).

¹⁶ It remains mysterious why the lower manner adverb cannot be scrambled as in (i); the adverbs in the examples only modify the higher vP, that is the passive morpheme.

- (i) a. [TP gakusei-ga [vP yorokonde [vP *t*_{NOM} san-nin [vP *t*_{Adv} *t*_{NOM-NQ} ke]]-rare]-ta]
 b. [TP yorokonde [TP gakusei-ga [vP [vP *t*_{NOM} san-nin [vP *t*_{Adv} *t*_{NOM-NQ} ke]]-rare]-ta]

- (132) Gakusei-ga ni-hon no boo de san-nin tatak-are-ta
 student-NOM 2-CL-INST of stick with 3-CL-NOM beat-PASS-PAST
 ‘Three students were beaten with two sticks.’ $3 > 2, *2 > 3$
- (133) Gakusei-ga hutatu no heya de san-nin tatak-are-ta
 student-NOM 2-CL-LOC of room in 3-CL-NOM beat-PASS-PAST
 ‘Three students were beaten in two rooms.’ $?3 > 2, 2 > 3$

These behaviors of VP internal adjuncts pattern with ones in the adjunct intervention (section 1.2.4), in which instrumental PPs are base-generated inside the VP and may be A'-scrambled, and in which locative PPs are base-generated either inside VP or outside VP. This overlapping leads us to expect that the FNQ occupies somewhere as high as the stranded subject NQ in transitive sentences, that is, Spec,vP, as exemplified in (134):

- (134) [_{TP} gakusei-ga [_{??} hutatu no heya de [_{vP} [_{vP} *t*_{NOM} san-nin [_{vP} *t*_{NOM-NQ} tatak]]-are]-
 ta] (= 133)

The subject and its NQ are base-generated in the object position, and, then, the subject A- moves up to Spec,TP, dropping off the NQ on the way, e.g., Spec,vP. Since the instrumental PP is A'-scrambled, it should be reconstructed inside the VP in terms of a scope interpretation. Hence, the FNQ necessarily takes a scope over the PP. Meanwhile, since a locative PP can be base-generated adjoining to vP, the PP may be higher than Spec,vP, viz., the dropped NQ.

- (135) [TP gakusei-ga [?? ni hon no boo de [vP [vP *t*_{NOM} san-nin [vP *t*_{PP} *t*_{NOM-NQ} tatak]]-are]-ta] (= 121)

An FNQ in unaccusatives conforms to the passive pattern. (136) shows the manner adverb cannot precede the FNQ. It can be accounted for if the FNQ is stranded above vP, and if the manner adverb is base-generated inside the VP and can only be scrambled locally inside the vP.¹⁷

- (136) a. *?Gakusei-ga ofisu ni yorokonde san-nin kita.

student-NOM office to joyfully 3-CL came

Intended: ‘Three students joyfully came to the office.’

- b. *?Gakusei-ga yorokonde ofisu ni san-nin kita.

- c. *?Gakusei-ga yorokonde san-nin ofisu ni kita.

As expected, when the NQ precedes the manner adverb, the sentence is fully acceptable in unaccusatives (137).

- (137) Gakusei-ga (ofisu ni) san-nin (ofisu ni) yorokonde (ofisu ni) kita.

student-NOM office to 3-CL joyfully came

‘Three students joyfully came to the office.’

¹⁷ The PP *ofisu ni* ‘to the office’ may either follow or precede the FNQ since it is an argument, which can normally be scrambled freely.

Thus, the FNQs in passives and unaccusatives necessarily A-move accompanying the host NP, i.e., the FNQ may not be stranded through an A-movement. On the other hand, (138) illustrates that an FNQ may be stranded by the subject, for the FNQ can take a scope below negation. In which position an NQ may be stranded, and which types of movement may strand an FNQ, I leave open for future work.

(138) Gakusei-ga kinoo nijuu-nin hon-o kawa-nakat-ta

student-NOM yesterday 20-CL book-ACC buy-NEG-PAST

‘Yesterday, twenty students did not buy a book.’

$20 > NEG$, $NEG > 20$

2. SEMANTICS

2.1. Distributivity

One of the major motivations for assuming a unified underlying structure between sentences with a Q-NP and with an FNQ as in (1), repeated here as (139), is that the two sentences have similar meanings.

- (139) a. San-nin no gakusei-ga kinoo hon-o katta.
3-CL of student-NOM yesterday book-ACC bought
‘Three students bought a book yesterday.’
- b. Gakusei-ga kinoo san-nin hon-o katta.
student-NOM yesterday 3-CL book-ACC bought
‘Three students bought a book yesterday.’

However, this is not always the case, and in general, one with an FNQ is more prone to semantic restrictions. For instance, Nakanishi (2008) observes that an FNQ allows only a distributive reading, while a Q-NP allows both a distributive reading and a collective reading. In a distributive reading, there occurs more than one event, and each of the members plays an agent role. For instance, (139a) may describe a series of events in which each of the three students got a book. The action itself or part of the action may or may not be done simultaneously: three people went there together and each of them got a book; during certain duration, three people in total got a book. On the other hand, in a

collective reading, the members as a single group play an agent role. (139a) also describes a group of three students who share a single copy. Thus, a Q-NP allows both readings. Meanwhile, (139b) does not have the latter reading; it only means that there are three people who each got a book.

Nakanishi (2008) demonstrates this restriction, showing the examples in (140). Whereas the Q-NP *san-nin no gakusei* ‘three students’ may co-occur with *korosu* ‘kill’ (140a), the FNQ may not be used with *korosu* (140b).

- (140) a. San-nin no gakusei-ga kinoo Peter-o korosita.
 3-CL of students-NOM yesterday Peter-ACC killed
 ‘Three students killed Peter yesterday.’ *Coll/#Dist*
- b. Gakusei-ga kinoo san-nin Peter-o *korosita*.
 students-NOM yesterday 3-CL Peter-ACC killed
 ‘3 students killed Peter yesterday.’ **Coll/#Dist*

Nakanishi (2008: 301, reading availabilities are added)

Since the action of killing a single person can be done only once, the subject of the verb *korosu* may not be read in a distributive reading. Rather, the subject should be read in a collective reading; (140a) only means that three students together killed Peter yesterday, and not that each of three students killed Peter (‘#’ stands for semantic awkwardness). (140b) is unacceptable since the readings forced by the verb and by the construction do not match; although the construction requires multiple events, Peter cannot be killed three times. In contrast, (141) is acceptable since the action of beating can be done repeatedly.

The contrast between (140b) and (141) leads us to expect that an FNQ does not allow a collective reading.

(141) Gakusei-ga kinoo san-nin Peter-o tataita.

students-NOM yesterday 3-CL Peter-ACC beat

‘Three students beat Peter yesterday.’

**Coll/Dist*

Nakanishi (2008: 301, reading availabilities are added)

On the other hand, (142) shows that both a Q-NP and an FNQ allow a distributive reading. Since the action of riding a unicycle is usually not likely to be done by a group of people, the verbal predicate allows only a distributive reading. Still, however, both sentences with a Q-NP and an FNQ are grammatical.

(142) a. San-nin no gakusei-ga kinoo itirinsya ni notta.

3-CL of student-NOM yesterday unicycle on rode

‘Three students rode on a unicycle yesterday.’

#Coll/Dist

b. Gakusei-ga kinoo san-nin itirinsya ni notta.

**Coll/Dist*

The sentences are acceptable with an appropriate context. For instance, Peter in (140b) may reincarnate again and again; three members in a circus team rode on a single unicycle in (142a).

Interestingly, with an appropriate context, e.g. circus, the collective reading is also available in (142b), or, more plausibly, in its variant (143), even though the NQs seem to

be FNQs. Similarly, not only can an FNQ sentence (77), repeated here as (144), be interpreted in a distributive reading, but it also can be read in a collective reading; a team of ten children made a dancing performance on the stage. As for a collective ‘floating’ NQ, I assume that it is in fact not an FNQ mentioned so far, but a base-generated adverbial NQ. Chapter 3 provides an account for this topic.

- (143) Gakusei-ga kinoo itirinsya ni san-nin notta.
 student-NOM yesterday unicycle on 3-CL rode
 ‘Three students rode on a unicycle.’

- (144) Kodomo-ga butai de zyuu-nin odotta
 child-NOM stage at 10-CL danced
 ‘Ten children danced at the stage.’

The fact that an FNQ allows only a distributive reading invokes an expectation that a predicate that denotes a collective event may not co-occur with an FNQ: *torikakomu* ‘surround’ (145), and *atumaru* ‘gather’ (146). Since the actions such as surrounding and gathering cannot be done by a single actor, these predicates should be inconsistent with an FNQ, which forces a distributive reading. This expectation is not the case, however, as in (145) and (146).

- (145) Heisi-ga kinoo 500-nin mati-o torikakonda.
 soldier-NOM yesterday 500-CL city-ACC surrounded
 ‘Five hundred soldiers surrounded the city yesterday.’ Nakanishi (2007:101)

(146) Gakusei-ga kinoo zyuu-nin atumatta.

student-NOM yesterday 10-CL gathered

‘Ten students gathered yesterday.’

Nakanishi (2007:101)

Nakanishi (2007) claims that the collectivities in (145) and (146) are in fact different from the one observed in (139a) and (140a). The former possesses an entailment of the subpart; if ten students gather, then it entails that nine students necessarily gather. Thus, the actions denoted by these predicates are distributive rather than collective. Surely, it is imaginable that each of the members moves individually, and as a result, encircles the city. Meanwhile, the actions in (139a) and (140a) are purely collective. Even if ten students beat a person, it does not always imply that nine students necessarily beat a person. The group of people rather than individuals plays an agent role. This point is evident in the following example.

(147) *Sagyoo-in-ga Tokyo-ni iti-man-nin Tokyo Tower-o tateta.

worker-NOM Tokyo-in 10,000-CL Tokyo.Tower-ACC built

‘Ten thousand workers built Tokyo Tower in Tokyo.’

Nakanishi (2007:102)

In (147), the context leads us to read it in a collective reading. The collective event of *tateru* ‘build’ cannot be done by each member of a group, but a set of actions done by a group can ‘build’ a tower. Thus, (145) and (146) are not considered as counterexamples against the restriction of an FNQ.

2.2. Specificity

The second semantic restriction imposed to an FNQ is the specificity. As Watanabe (2008) observes, an FNQ should be nonspecific, as demonstrated in (148).

- (148) a. John-wa piano-o 2-dai kaitagatta
 John-TOP piano-ACC 2-CL wanted.to.buy
 ‘John wanted to buy two pianos.’ *Non-specific*
- b. John-wa 2-dai no piano-o kaitagatta
 John-TOP 2-CL of piano-ACC wanted.to.buy *Specific/Non-Specific*

Watanabe (2008: 520, availabilities of readings are added)

In case of Q-NP, two pianos may or may not be specific pianos. In contrast, when the FNQ follows the host NP (148a), the specific reading cannot be obtained; (148a) does not mean that John wanted to buy two particular pianos.

Watanabe (2008) considers *piano-o ni-dai* ‘two pianos’ in (148a) as an NP-NQ, rather than FNQ. However, this does not affect the current analysis. Watanabe suggests that quantifier floating is a series of movements inside a nominal phrase (DP in his term), and is an extraction of part of the DP, stranding an NQ. NP-NQ is the final stage before the movement of quantifier stranding. Hence, as for the specificity, an FNQ and an NP-NQ should be nonspecific, while a Q-NP (except an NP-NQ) may or may not be specific.

On the other hand, Kitahara (1993) introduces examples (149), in which an FNQ is specific.

- (149) (Watashi-wa) Taro-ga Harvard no gakusei-o san-nin matta to
 I-TOP Taro-NOM Harvard of student-ACC 3-CL waited that
 kiiteita kedo Hanako-mo ϕ matta rasiyo
 heard while Hanako-(NOM)-also waited seem
 ‘While I have heard that Taro waited for three Harvard students, it seems that
 Hanako waited for (three Harvard students), too.’ *Specific*

Kitahara (1993: 184, availabilities of readings are added)

Suppose that ‘when an antecedent DP is specific, its deleted counterpart refers to the same referent of the antecedent DP’ (Kitahara 1993:183). For instance, in (150), a detective who came to Hanako’s house may or may not be the same as the one who came to Taro’s house. Hence, *keiji* ‘detective’ is nonspecific. Back to (149), the students for whom Hanako waited must be identical to ones for whom Taro waited. It means that the three students are specific.

- (150) (watasi-wa) keiji-ga Taro no ie ni kita to kiiteita kedo
 I-TOP detective-NOM Taro of house to came that heard while
ϕ Hanako no ie ni-mo kita rasiyo.
 Hanako of house to-also came seem
 ‘While I have heard that a detective came to Taro’s house, it seems that (a
 detective) came to Hanako’s house, too.’ *Non-Specific*

Kitahara (1993: 182, availabilities of readings are added)

Meanwhile, the example (151) demonstrates a case of a specific antecedent:

- (151) (Watasi-wa) Jiro no ofisu ni denwa-o sita keiji-ga Taro no
 I-TOP Jiro of office to call-ACC made detective-NOM Taro of
 ie ni kita to kiiteita kedo, ϕ Hanako no ie ni-mo
 house to came that heard while Hanako of house to-also
 kita rasiyo.

came seem

‘While I have heard that a detective who made a call to Jiro’s office came to
 Taro’s house, it seems that (a detective who made a call to Jiro’s office) came to
 Hanako’s house, too.’ *Specific*

Kitahara (1993: 182, availabilities of readings are added)

When the antecedent of a deleted phrase (indicated with ‘ϕ’) is modified by a relative clause, the antecedent *keiji* becomes specific, and hence a detective who came to Hanako’s house should be the one who came to Taro’s house.

Before comparing these two cases, I should clarify one thing. Watanabe (2008) and Kitahara (1993) differ in the analysis of an NP followed by an NQ. Whereas Watanabe (2008) considers *piano-o ni-dai* ‘two pianos’ in (148a) as an NP-NQ, rather than an FNQ, Kitahara (1993) considers *gakusei-o 3-nin* ‘three students’ in (149) as a Q-NP. In his analysis, a specific DP does not permit an NQ to float out. There arises an apparent contrast when adding an adverb as in (152) and (153).

- (152) John-wa piano-o yokubatte 2-dai kaitagatta
 John-TOP piano-ACC greedily 2-CL wanted.to.buy
 ‘John wanted to buy two pianos greedily.’ (cf. 148a) *Non-specific*
- (153) (Watashi-wa) Taro-ga Harvard no gakusei-o nonbiri san-nin
 I-TOP Taro-NOM Harvard of student-ACC lazily 3-CL
 matta to kiiteita kedo Hanako-mo ϕ matta rashiiyo
 waited that heard while Hanako-(NOM)-also waited seem
 ‘While I have heard that Taro waited for three Harvard students, it seems that
 Hanako waited for (three Harvard students), too.’
 (cf.149) *Non-specific*

The example (152) indicates that, as Watanabe expected, an adverb does not alter the specificity, since NP-NQs and FNQs behave in the same way with respect to the specificity. Contrary to Kitahara’s claim, (153) is still acceptable, though in a different meaning; Taro (and Hanako) waited for students until the number of the students who came reached three. In addition, the three students in (153) are nonspecific. The difference between Watanabe’s and Kitahara’s observation seems to stem from the form of the host NP; a bare noun and a modified noun. Given, following Kawashima (1998), that a contrastive set makes the object receive a specific interpretation, the modifier *Harvard no* ‘of Harvard’ defines the specificity of the object. This view sounds sound, since it is proven in (154), in which the object is nonspecific when it is a bare noun. It is also correctly predicted as in (155) that an argument of a noun is not contrastive enough to make the NP specific.

- (154) (Watashi-wa) Taro-ga gakusei-o san-nin matta to
 I-TOP Taro-NOM student-ACC 3-CL waited that
 kiiteita kedo Hanako-mo ϕ matta rashiiyo
 heard while Hanako-(NOM)-also waited seem
 ‘While I have heard that Taro waited for three Harvard students, it seems that
 Hanako waited for (three students), too.’ (cf.149) *Non-specific*

- (155) (Watasi-wa) Taro-ga gengogaku-no hon-o san-satu yonda to
 I-TOP Taro-NOM linguistics-of book-ACC 3-CL read that
 kiiteita-kedo Hanako-mo ϕ yonda-rasiiyo
 heard-while Hanako-NOM-also read-seem
 ‘While I have heard that Taro read three linguistics books, it seems that Hanako
 read (three linguistic books), too.’ *Non-Specific*

Kitahara (1993: 183, availabilities of readings are added)

The example (156) supports this conclusion. When it is possible to construe the object as a specific entity, a bare noun can be specific. Since UFOs are limited in number, it seems possible to be specific without restrictive modifiers.

- (156) John-ga UFO-o san-ki mita to kiiteita kedo, Mary-mo ϕ
 John-NOM UFO-ACC 3-CL saw that heard while Mary-(NOM)-also
 mita rasiyo
 saw seem
 ‘While I have heard that John saw three UFOs, it seems that Mary saw (three
 UFOs), too.’ *Specific/ Non-specific*

Additional supporting evidence for the non-specificity of an FNQ is found in the host NP with a pluralizer *-tati*, which Ochi (2012) claims allows only a specific reading as in (157).

- (157) Boku-wa kodomo-tati-o sagasiteiru
 I-TOP child-PL-ACC look.for
 ‘I am looking for the children.’ Ochi (2012:94)

It sounds bizarre that the speaker is looking for any unspecified children in (157), and instead, *kodomo-tati* ‘children’ should be the specific children. Based on this observation, (158) is unnatural due to the mismatch of the specificity; *-tati* requires the specific reference while the FNQ construction requires the nonspecific reading.¹⁸ It also sounds bizarre if any three children suffice for the sake of the speaker:

¹⁸ (158) is more acceptable if it may be perceived in a partitive reading (see the next section); I am looking for three of the children.

(158) ??Boku-wa kodomo-tati-o hissini san-nin sagasiteiru

I-TOP child-PL-ACC desperately 3-CL look.for

Intended: ‘I am desperately looking for the three children.’

Alam (1997) points out that an FNQ with a bare noun may be specific, as the following;

(159) Ni-hon tomodati-ga eiga-o mite kita. ϕ omosiro-soona-node

2-CL friend-NOM movie-ACC see come interesting-see-because

bokumo ϕ miru-kotoni-sita

I-(NOM)-also see-to-decided

‘My friend saw two movies. As (they) seem to be interesting, I have decided to see (the two movies).’ *Specific* Alam (1997:385)

It seems that the intermediate clause *omosiro-soona-node* ‘seem to be interesting’ requires the object to be specific. (160) shows, however, that even if the clause is taken away, the object can still be specific. I examine the specific ‘floating’ NQ in Chapter 4 to argue that the specific NQ, usually in the sentence-initial position, is in fact not an FNQ.

(160) Ni-hon tomodati-ga eiga-o mite kita kedo, bokumo

2-CL friend-NOM movie-ACC see come while I-(NOM)-also

ϕ miru-kotoni-sita

see-to-decided

‘While my friend saw two movies, I decided to see (the two movies/two movies),

too.’

Specific/ Non-specific

2.3. Partitivity

Partitivity is also thought to form part of the semantic restriction of an FNQ. Inoue (1978) argues that floating an NQ out of a definite NP alters the meaning of the sentence; a definite NP that is quantified by a ‘floating’ NQ has a whole-part relation with the NQ. See Inoue’s examples;

(161) a. [Mae-o hasitteita ni-dai no kuruma]-ga huunni tukamatta

ahead-ACC running 2-CL of car-NOM unfortunately got.caught

‘Two cars which were running ahead of me unfortunately got caught.’

b. [Mae-o hasitteita kuruma]-ga huuni ni-dai tukamatta

ahead-ACC running car-NOM unfortunately 2-CL got.caught

‘Two of the cars which were running ahead of me unfortunately got

caught.’

Inoue (1978:174, modified)

Since it is modified by the relative clause, the NP *kuruma* ‘car’ in (161) is definite. When the NQ is part of Q-NP as in (161a), the number of cars is two, and the two cars in question are both got caught. Meanwhile, when the NQ is outside the larger NP as in (161b), there is a difference in the number of cars; more than two cars were running ahead, and two of them were in trouble. Thus, an NQ associated with a definite NP has a partitive reading.

Whether or not a partitive NQ is one of the embodiments of an FNQ is controversial. In this subsection, I explore some of the properties of partitive NQs. First of all, even if the host NP is definite, the partitive NQ is nonspecific as illustrated in (162) and (163).

(162) Torakku-ga [mae-o hasitteita jitensya]-o totuzen ni-dai

truck-NOM ahead-ACC running bicycle-ACC suddenly 2-CL

haneta kedo, basu-mo ϕ haneta.

ran.down while bus-(NOM)-also ran.down

‘While the truck which was running ahead of me suddenly ran over two bicycles,
a bus also ran over (two bicycles).’ *Non-specific*

(163) John-ga [mati de mitaketa inu]-o doositemo san-hiki kaitagatta

John-NOM mati in saw dog-ACC in.any.way 3-CL have.wanted.to

‘John wanted to have in any way three of the dogs which he had seen in the town.’

Non-specific

The two bicycles that were run down by the truck may be different from the ones that the bus ran down. Similarly, John did not want to have three particular dogs. Thus, the (non-) specificity of a partitive NQ patterns with an FNQ.

Next, as for its derivation, Haig (1980) claims that a partitive NQ and an FNQ are structurally identical, and that an NQ acquires a partitive reading when it follows the host NP. Watanabe (2008) posits different structures for these two types of NQs, contra Haig, presenting examples as in (164) which are not likely to be derived through quantifier floating. As shown in (165), the NQ *ni/san-dai* may not be resurrected in the host NP.

- (164) [Narande hasitteita suu-dai no torakku]-ga ni-san-dai gaadoreeru
lined.up running several-CL of truck-NOM 2/3-CL guardrail
ni butukatta.
to struck

‘Two or three of the several trucks that were driving abreast struck the guardrail.’

Inoue (1978:175, cited in Watanabe 2008:523)

- (165) *Ni-san-dai no narande hasitteita suu-dai no torakku-ga gaadoreeru
2/3-CL of lined.up running several-CL of truck-NOM guardrail
ni butukatta.
to struck

Intended: ‘Two or three of the several trucks that were driving abreast struck the guardrail.’
Watanabe (2008:523)

Lastly, (166) illustrates that a partitive NQ may not be scrambled across the host NP. Interestingly, however, (166) is acceptable as a counterpart of a prototypical Q-NP, as in (167). These examples both can mean that it is two or three trucks that are running abreast before striking the guardrail.

(166) *Ni-san-dai, narande hasitteita (suu-dai no) torakku-ga gaadoreeru

2/3-CL lined.up running several-CL of truck-NOM guardrail

ni butukatta.

to struck

Intended: ‘Two or three of the (several) trucks that were driving abreast struck the guardrail.’ (Unacceptable as a partitive NQ)

(167) Ni-san-dai no narande hasitteita torakku-ga gaadoreeru ni butukatta.

2/3-CL of lined.up running truck-NOM guardrail to struck

‘Two or three trucks that were driving abreast struck the guardrail.’

Thus, structurally a partitive NQ does not share properties with an FNQ, and it suggests that a partitive NQ is base-generated in the location following the host NP as an adverbial. (However, this conclusion does not accommodate the fact that an NQ whose host is a definite NP as in (161b) does not have a cardinal reading.)

2.4. Restrictions on predicates

2.4.1. Theme role assigners

Miyagawa (1989) points out that the floatability of the object NQ is defined by the type of the verbal predicate; when the verb assigns a Theme role to the object, an FNQ may be associated with the object. He suggests that whether or not a verb assigns a Theme role can be tested with the ‘intransitivising resultative’ construction *–te aru*. For instance, (168) indicates that the verb *waru* ‘break’ may be attached to *te aru*, and hence, the object of the verb may receive a floating quantification as in (169).

(168) Sara-ga/-o wat-te aru

plate-NOM/-ACC broken

‘Plates are broken. / Plates have been broken.’

(169) Ni-mai akanboo-ga sara-o watta

2-CL baby-NOM plate-ACC broke

‘The baby broke two plates.’

Miyagawa (1989:62)

In contrast, the verb *matu* ‘wait’ does not assign a Theme role, since *te aru* may not co-occur with it, as in (170). Accordingly, the object of the verb disallows the NQ to float out as in (171) (‘?’ is his judgment).^{19,20}

¹⁹ As for the discussions against Miyagawa (1989), semantics and/or pragmatic factors are raised up to restrict the floating of object NQs (see Kitahara 1993, Alum 1997, and Hamano 1997).

²⁰ (171) becomes more felicitous in certain contexts; e.g., Mary is looking for two graduate assistants.

(170) *Gakusei-ga/-o mat-te aru

student-NOM/-ACC waited

Intended: ‘Students are waited for.’

(171) ?*Hutari_k Mary-ga gakusei-o *t_k* matteiru (koto)

2-CL Mary-NOM student-ACC wait fact

‘(The fact that) Mary is waiting for two students.’

Miyagawa (1989:54)

2.4.2. *Individual-level predicates

The last relevant restriction on the predicate type is that individual-level predicates are not consistent with a floating quantification (172). Watanabe (2008) points out that the subject of individual-level predicates is not allowed to take a nonspecific reading, which is one of the properties of an FNQ. The assumption predicts that an NP-NQ whose host NP becomes specific with the help of a modifier will be allowed to float out. That is the case in (173).

(172) ?*Gakusei-ga san-nin eigo-ga umai.

student-NOM 3-CL English-NOM good.at

‘Three students are good at English.’

Watanabe (2008:520)

- (173) ?Kono kurasu de-wa Okinawa syussin no gakusei-ga san-nin
 this class in-TOP Okinawa from of student-NOM 3-CL
 eigo-ga umai.
 English-NOM good.at
 ‘Three students from Okinawa are good at English in this class.’

Mihara (1998) also claims that the unacceptability of an FNQ with the dative subject construction as in (53), repeated here as (174), can be explained by the tendency for the construction to denote an attribute of the subject, and hence to be equivalent to individual-level predicates. Whether or not these restrictions on predicate types can be explained syntactically rather than semantically or contextually is a task for future research.

- (174) *Korerano kodomo-tati-ni san-nin eigo-ga waku.
 these child-PL-DAT 3-CL English-NOM understand
 Intended: ‘These three children understand English.’

2.5. Aspectual delimitedness

Mihara (1998) further claims that the floatability of the subject NQ is affected by the aspectual factor of the context; when the context connotes the endpoint or result of the action, the subject NQ may float out. Mihara argues that the awkwardness of (175a) results from the contextual aspectual delimitedness. Since no endpoint is construable, the

sentence is less acceptable than (175b), in which the ending is apparent as the closing time of the library.

(175) a. ??Gakusei-ga toshokan de sanjuu-nin benkyoosita

student-NOM library in 30-CL studied

‘Thirty students studied in the library.’

b. Heikan magiwa made, gakusei-ga toshokan de sanjuu-nin benkyoosita

closing just.before until student-NOM library in 30-CL studied

‘Until just before it was closed, thirty students studied in the library.’

Mihara (1998-3:106, modified)

2.6. Scope

2.6.1. Q-raising and superiority

In general, a quantifier scopes in its surface position unless it is scrambled. The consequence is that the subject takes a wider scope than the object, and that the indirect object takes a wider scope than the direct object. (176) and (177) illustrates that the prediction is correct.

(176) Yo-nin no otoko-ga ni-hiki no neko-o mita.

4-CL-NOM of man-NOM 2-CL-ACC of cat-ACC saw

‘Four men saw two cats.’

$4 > 2$, $*2 > 4$

(177) John-ga san-nin no gakusei-ni ni-hiki no neko-o miseta

John-NOM 3-CL-DAT of student-DAT 2-CL-ACC of cat-ACC showed

‘John showed two cats to three students.’

3 > 2, *2 > 3

Following May (1985), Aoun and Li (1993), and Bruening (2001), I assume that quantifiers are covertly raised up in order to obtain a different interpretation or relative scope with other quantifiers, if any. Assuming that every quantifier is raised either overtly or covertly (May 1985), (178) illustrates a case of quantifier raising (Q-raising) of (176) and (177).²¹ In either case, the post-raising order cannot be inverted from the pre-raising one (179).

(178) Q-raising (to be modified)

a. NOM-4 ACC-2 [t_{NOM} t_{ACC} mita] (= 167)

b. DAT-3 ACC-2 [NOM t_{DAT} t_{ACC} miseta] (=168)

(179) a. *ACC-2 NOM-4 [t_{NOM} t_{ACC} mita]

b. *ACC-2 DAT-3 [NOM t_{DAT} t_{ACC} miseta]

This is because the NQs obey the superiority condition, which is applied to multiple *wh*-movements. It formulates “a preference for extracting the structurally higher one when two or more elements are eligible to the same movement” (Bruening 2001:245). In

²¹ In this subsection, NQs are fixed depending on grammatical relations: four is used with the nominative subject, three is with the dative indirect object, two is with the accusative direct object, and five is with the instrumental subject. I employ an elided form: NOM-4, DAT-3, ACC-2, and INST-5, respectively.

addition, Takahashi (1993) shows that the superiority effect is applicable for the scrambling of *wh*-phrases in Japanese. Due to the effect, the scopal hierarchy *NOM* > *DAT* > *ACC* always holds in Q-raising.

2.6.2. Scope of *all*

Things need to be reconsidered when considering *all*, however. Mihara and Hiraiwa (2006) introduce one case that contradicts the assumption:

- (180) (Kono kurasu no) daremo-ga dareka-o ijimeteiru
 this class of everyone-NOM someone-ACC bully
 ‘(In this class) someone bullies everyone.’ *every* > *some*, *some* > *every*
 Mihara and Hiraiwa (2006:11)

When universal quantifiers such as *daremo* ‘everyone’, *zen’in* ‘all (people)’, and *zenbu* ‘all (things/people)’ precede an existential quantifier, it may take a scope either wider or narrower than the existential quantifier. This scope ambiguity is also observed in the scope relations between *zen’in/zenbu* and NQs as in (181) through (185).

- (181) Zen’in-ga hutari no gakusei-o tataita
 all-NOM 2-CL of student-ACC hit
 ‘All hit two students.’ *all* > 2, 2 > *all*

- (182) Zen'in-ga san-nin no gakusei-ni atta
 all-NOM 3-CL of student-DAT met
 'All met three students' *all > 3, 3 > all*
- (183) Zen'in-ga John-ni ni-hiki no neko-o miseta
 all-NOM John-DAT 2-CL of cat-ACC showed
 'All showed two cats to John' *all > 2, 2 > all*
- (184) Zen'in-ga san-nin no gakusei-ni neko-o miseta
 all-NOM 3-CL of student-DAT cat-ACC showed
 'All showed a cat to three students.' *all > 3, 3 > all*
- (185) John-ga zen'in-ni ni-hiki no neko-o miseta
 John-NOM all-DAT 2-CL of cat-ACC showed
 'John showed two cats to all.' *all > 2, 2 > all*

Conversely, when a universal quantifier follows an existential quantifier, scope relations are fixed to the one in the surface order as in (186) through (190). Thus, *all* somehow circumvents the superiority condition, and therefore the Q-raising analysis should be re-formulated.

- (186) Yo-nin no gakusei-ga zen'in-o tataita
 4-CL of student-NOM all-ACC hit
 'Four students hit all.' *4 > all, *all > 4*

- (187) Yo-nin no gakusei-ga zen'in-ni atta
 4-CL of student-NOM all-DAT met
 'Four students met all.' $4 > all, *all > 4$
- (188) Yo-nin no gakusei-ga John-ni zenbu no neko-o miseta
 4-CL of student-NOM John-DAT all-ACC of cat-ACC showed
 'Four students showed all cats to John.' $4 > all, *all > 4$
- (189) Yo-nin no gakusei-ga zen'in-ni neko-o miseta
 4-CL of student-NOM all-DAT cat-ACC showed
 'Four students showed a cat to all.' $4 > all, *all > 4$
- (190) John-ga san-nin no gakusei-ni zenbu no neko-o miseta
 John-NOM 3-CL of student-DAT all-ACC of cat-ACC showed
 'John showed all cats to three students.' $3 > all, *all > 3$

2.6.3. Q-raising revisited

2.6.3.1. The structure of ditransitives

In advance of presenting the revised Q-raising formulae, I briefly overview the structure and derivation of ditransitives, which are crucial to the analysis here. Following Pylkkänen (2008), I add the Applicative Phrase (ApP)²² to the basic structure of the sentence which I have employed so far; the TP-vP-VP frame. Consequently, the assumed structure of ditransitives is as follows: as indicated in (191), ApP is introduced as a complement of V. Ap is a functional category introducing an applied argument, in the

²² To be precise, I employ Low Applicative Heads in her term to introduce an applied argument.

Spec of which a dative indirect object is merged. Ap takes an accusative direct object as its complement.

(191) The structure of ditransitives (to be modified)

[_{TP} John-_{NOM} [_{vP} *t*_{NOM} [_{VP} [_{ApP} DAT-3 [_{Ap'} ACC-2 Ap]]-V]-v]-T] (= 176)

I further assume that the dative NP A-moves up to Spec,VP as in (192). I seek the motivation of this movement for Case assignments. In order to be assigned a dative Case from V (or from v through V), an indirect object moves to Spec,VP. The mechanism patterns with the movement of subject, which moves to Spec,TP to get a nominative Case.²³

(192) The structure of ditransitives

[_{TP} John-_{NOM} [_{vP} *t*_{NOM} [_{VP} DAT-3 [_{ApP} *t*_{DAT} [_{Ap'} ACC-2 Ap]]-V]-v]-T]

2.6.3.2. Q-raising revised and *all*

In order to consider the scope of *all*, the procedure of Q-raising should be re-examined. May (1985) argues that quantifier interpretations are implemented above TP, while Bruening (2001) argues that vP-internal elements are raised up to the edge of phase,

²³ The mechanism mentioned here is not compatible with the current analysis in the minimalist framework (Chomsky 2001, 2005), which says the subject agrees with T and is assigned a nominative Case in Spec,vP, and moves up to Spec,TP simply so as to satisfy the EPP feature of T. To adopt this analysis, I need to assume V (at least in the case of ditransitives) has an EPP feature.

i.e., vP, so as to be interpreted. I adopt part of each view. The nominative subject is raised above TP, and the vP-internal elements are calculated inside vP. I claim additionally, however, that the Ap is capable of forming a phase and it also provides a locus of scope calculation insomuch as a dative NP is quantified. Second, as for *all*, I expect it not to be Q-raised. Instead, it may be interpreted in various positions: the base-generated position or the landing sites of an A-movement.

Based on these assumed formulae and apparatuses, I explore the procedure of Q-raising in the sentences (181) through (190). I begin with the former two sentences:

- (193) NOM-all ACC-2 (= 181) *all > 2, 2 > all*
- Base: [TP [vP NOM-all [vP ACC-2 V]-v]-T]
- Surface: [TP NOM-all [vP *t*_{NOM} [vP ACC-2]]V-v-T]
- Q-raising: [TP NOM-all [vP ACC-2 [vP NOM-all [vP *t*_{ACC}]]]V-v-T]
- (194) NOM-all DAT-3 (= 182) *all > 3, 3 > all*
- Base: [TP [vP NOM-all [vP DAT-3 V]-v]-T]
- Surface: [TP NOM-all [vP *t*_{NOM} [vP DAT-3]]V-v-T]
- Q-raising: [TP NOM-all [vP DAT-3 [vP NOM-all [vP *t*_{DAT}]]]V-v-T]

In (193) and (194), the nominative *all* is interpreted either in the surface position, viz. Spec,TP, or the base-generated position, viz. Spec,vP. Meanwhile, the accusative and dative objects, both of which I assume are internal arguments of the verb, are raised up to adjoin to vP. As a result, the scope relation is ambiguous: when the subject is at Spec,TP,

all takes a scope over the object; when the subject is reconstructed to Spec,vP, *all* takes a scope below the object.

Next, I proceed to the ditransitives. When the dative is not a quantified NP, the accusative NP is raised up to vP, passing through ApP. Since the subject may or may not be reconstructed, the relative scope is ambiguous as in (195).

- (195) NOM-all DAT ACC-2 (= 183) *all > 2, 2 > all*
- Base: [TP [vP NOM-all [vP [ApP DAT [Ap' ACC-2 Ap]V]]]T]
- Surface: [TP NOM-all [vP *t*_{NOM} [vP DAT [ApP *t*_{DAT} [Ap' ACC-2]]]]T]
- Q-raising:[TP NOM-all [vP ACC-2 [vP NOM-all [vP DAT [ApP [Ap' *t*_{ACC}]]]]]T]

In (196), in which the dative NP scopes against the nominative NP, since the dative NP has A-moved to VP, i.e., out of the ApP phase, it is Q-raised up to vP. As a result, the dative is higher than Spec,vP, and lower than Spec,TP.

- (196) NOM-all DAT-3 ACC (= 184) *all > 3, 3 > all*
- Base: [TP [vP NOM-all [vP [ApP DAT-3 [Ap' ACC Ap]V]-T]
- Surface: [TP NOM-all [vP *t*_{NOM} [vP DAT-3 [ApP *t*_{DAT} [Ap' ACC]]]]T]
- Q-raising:[TP NOM-all [vP DAT-3 [vP NOM-all [vP *t*_{DAT} [ApP *t*_{DAT} [Ap' ACC]]]]]T]

When the scope relation is established between the dative and accusative NPs (197), Ap forms a phase and the accusative NP is Q-raised up to adjoin to ApP. Since the dative NP *all* may be in Spec,VP, or in Spec,ApP, the scope is ambiguous.

(197) NOM DAT-all ACC-2 (= 185)

all > 2, 2 > all

Base: [TP [VP NOM [VP [ApP DAT-all [Ap' ACC-2 Ap]]V]]T]

Surface: [TP NOM [VP *t*_{NOM} [VP DAT-all [ApP *t*_{DAT} [Ap' ACC-2]]]]T]

Q-raising: [TP NOM [VP [VP DAT-all [ApP ACC-2 [ApP DAT-all [Ap' *t*_{ACC}]]]]]T]

Next, let us consider what the Q-raising is like when an NQ precedes *all*. As shown in (198) through (200), the accusative and dative NPs in the complement position do not move, and *all* is not Q-raised. Hence, the subject always scopes over the objects.²⁴

(198) NOM-4 ACC-all (= 186)

*4 > all, *all > 4*

Base: [TP [VP NOM-4 [VP ACC-all V]-v]-T]

Surface: [TP NOM-4 [VP *t*_{NOM} [VP ACC-all]]]V-v-T]

Q-raising: [TP NOM-4 [VP [VP ACC-all]]]V-v-T]

(199) NOM-4 DAT-all (= 187)

*4 > all, *all > 4*

Base: [TP [VP NOM-4 [VP DAT-all V]-v]-T]

Surface: [TP NOM-4 [VP *t*_{NOM} [VP DAT-all]]]V-v-T]

Q-raising: [TP NOM-4 [VP [VP DAT-all]]]V-v-T]

²⁴ The subject is supposed to be Q-raised above TP, but for ease of exposition, the Q-raising of the subject is eliminated from the description.

(200) NOM-4 DAT ACC-all (= 188)

$4 > all, *all > 4$

Base: [TP [vP NOM-4 [VP [ApP DAT [Ap' ACC-all Ap]]V]T]

Surface: [TP NOM-4 [vP t_{NOM} [VP DAT [ApP t_{DAT} [Ap' ACC-all]]]] T]

Q-raising:[TP NOM-4 [vP [VP DAT [ApP [Ap' ACC-all]]]] T]

In the case of the dative NP in ditransitives (201), the nominative subject, which is an NQ, has A-moved to Spec,TP, and the dative is interpreted either in Spec,VP, or in Spec, ApP.

(201) NOM-4 DAT-all ACC (=189)

$4 > all, *all > 4$

Base: [TP [vP NOM-4 [VP [ApP DAT-all [Ap' ACC Ap]]V]v]T]

Surface: [TP NOM-4 [vP t_{NOM} [VP DAT-all [ApP t_{DAT} [Ap' ACC]]]]T]

Q-raising:[TP NOM-4 [vP [VP DAT-all [ApP DAT-all [Ap' ACC]]]] T]

The example (202) shows that *all* in the object position does not Q-raise and hence it always scopes below the dative. Therefore, the subject is uniformly above the indirect object.

(202) NOM DAT-3 ACC-all (=190)

$3 > all, *all > 3$

Base: [TP [vP NOM [VP [ApP DAT-3 [Ap' ACC-all Ap]]V]v]T]

Surface: [TP NOM [vP t_{NOM} [VP DAT-3 [ApP t_{DAT} [Ap' ACC-all]]]]T]

Q-raising:[TP NOM [vP DAT-3 [VP [VP [ApP [Ap' ACC-all]]]]T]

As we have seen so far, the chains of Q-raising of NQs are never crossed. The subject is above T, while the dative and accusative is below T. The dative is above v, and the accusative with quantified dative is below v. Thus, the superiority condition can be held responsible for the hierarchical structure of the scope interpretation.

Finally, I illustrate the cases wherein all three arguments in a ditransitive sentence are quantified as in (203) and (204).

(203) Zen'in-ga san-nin no gakusei-ni ni-hiki no neko-o miseta.

all-NOM 3-CL-DAT of student-DAT 2-CL-ACC of cat-ACC showed

‘All showed two cats to three students.’ $all > 3 > 2, 3 > all > 2$

(204) Yo-nin no gakusei-ga zen'in-ni ni-hiki no neko-o miseta.

4-CL-NOM of student-NOM all-DAT 2-CL-ACC of cat-ACC showed

‘Four students showed two cats to all.’ $4 > all > 2, 4 > 2 > all$

In (205), *all* is ambiguous in the scope against the following element, but the accusative is confined inside the ApP since the dative is quantified. Consequently, the scope formulae that I have thus far discussed predicts two possibilities: $all > 3 > 2, 3 > all > 2$. The prediction exactly reflects the judgment. In the same way, when the dative is *all* as in (206), the dative is ambiguous against the accusative as well as in (194), and the subject has A-moved far away from them. The Q-raising is consistent with the judgment: $4 > all > 2, 4 > 2 > all$.

(205) NOM-all DAT-3 ACC-2 (= 203) *all > 3 > 2, 3 > all > 2*

Base: [TP [vP NOM-all [vP [ApP DAT-3 [Ap' ACC-2 Ap]]V]]T]

Surface: [TP NOM-all [vP *t*_{NOM} [vP DAT-3 [ApP *t*_{DAT} [Ap' ACC-2]]]]Ap-V-v-T]

Q-raising:

[TP NOM-all [vP DAT-3 [vP NOM-all [vP *t*_{DAT} [ApP ACC-2 [ApP *t*_{DAT} [Ap' *t*_{ACC}]]]]]T]

(206) NOM-4 DAT-all ACC-2 (= 204) *4 > all > 2, 4 > 2 > all*

Base: [TP [vP NOM-4 [vP [ApP DAT-all [Ap' ACC-2 Ap]]V]]T]

Surface: [TP NOM-4 [vP *t*_{NOM} [vP DAT-all [ApP *t*_{DAT} [Ap' ACC-2]]]]T]

Q-raising:[TP NOM-4 [vP [vP DAT-all [ApP ACC-2 [ApP DAT-all [Ap' *t*_{ACC}]]]]]T]

2.6.4. Q-raising and FNQ

2.6.4.1. *Q-raising over an FNQ

Given the idiosyncratic semantic properties of an FNQ discussed in this chapter, an FNQ is expected to undermine the regularity of Q-raising. As shown in (207) and (208), an FNQ does not seem to do so; the scope relations of NQs reflect the surface order.

(207) a. Yo-nin no gakusei-ga kinoo hutari no sensei-o tataita

4-CL-NOM of student-NOM yesterday 2-CL-ACC of teacher-ACC hit

‘Four student hit three teachers yesterday’ *4 > 2, *2 > 4*

b. Gakusei-ga kinoo yo-nin hutari no sensei-o tataita. *4 > 2, *2 > 4*

(208) a. Yo-nin no gakusei-ga kinoo san-nin no sensei-ni
 4-CL-NOM of student-NOM yesterday 3-CL-DAT of teacher-DAT
 neko-o miseta.
 cat-ACC showed

‘Four students showed a cat to three teachers yesterday.’ $4 > 3$, $*3 > 4$

b. Gakusei-ga kinoo yo-nin san-nin no sensei-ni neko-o miseta.

$4 > 3$, $*3 > 4$

However, Q-raising over an FNQ is impermissible. (209) illustrates: when the subject NQ is stranded, the object NQ cannot be Q-raised beyond the subject FNQ in Spec,vP, otherwise the object should take a wider scope than the subject FNQ. The same account can be applied to (220). An FNQ blocks Q-raising of the subsequent element.

(209) NOM/4 ACC-2 (= 200b) $4 > 2$, $*2 > 4$

Base: [TP [vP NOM-4 [VP ACC-2 V]-v]-T]

Surface: [TP NOM [vP t_{NOM} 4-NOM [VP ACC-2]]-V-v-T]

Q-raising: [TP NOM [vP 4-NOM [VP ACC-2]]-V-v-T]

cf. *[TP NOM [vP ACC-2 [vP 4-NOM [VP t_{ACC}]]-V-v-T]

(210) NOM/4 DAT-3 ACC (= 201b) $4 > 3$, $*3 > 4$

Base: [TP [vP NOM-4 [VP [ApP DAT-3 [Ap' ACC Ap]]]V]]T]

Surface: [TP NOM [vP t_{NOM} 4-NOM [VP DAT-3 [ApP t_{DAT} [Ap' ACC]]]] T]

Q-raising: [TP NOM [vP 4-NOM [VP DAT-3 [ApP t_{DAT} [Ap' ACC]]]] T]

cf. *[TP NOM [vP DAT-3 [vP 4-NOM [VP t_{DAT} [ApP t_{DAT} [Ap' ACC]]]] T]

Nevertheless, an FNQ is not strong enough to freeze the scope. The example (211) illustrates that the intervention is restricted to the immediately subsequent element; the subject FNQ does not block the Q-raising of the accusative to adjoin to ApP.

- (211) Gakusei-ga kinoo yo-nin zen'in-ni 2-hiki no neko-o miseta.
 student-NOM yesterday 4-CL-NOM all-DAT 2-CL-ACC of cat-ACC showed
 'Four students showed two cats to all yesterday.' $4 > all > 2, *4 > 2 > all$

Some may argue that the NQ is recalled by the host NP upon the time of Q-raising (212). This fails to explain (213), which shows that the host NP per se does not contribute to the scope calculation.

- (212) NOM/4 ACC-2 (= 204) $4 > 2, *2 > 4$
 Base: [TP [VP NOM-4 [VP ACC-2 V]-v]-T]
 Surface: [TP NOM [VP t_{NOM} 4-NOM [VP ACC-2]]-V-v-T]
 Q-raising: [TP NOM-4 [VP ACC-2 [VP t_{NOM-NQ} [VP t_{ACC}]]-V-v-T]
 (213) Kuruma-o [gakusei-ga san-nin] (kinoo) [t_{ACC} ni-dai] nusunda.
 car-ACC student-NOM 3-CL-NOM (yesterday) 2-CL-ACC stole
 'Three students stole two cars yesterday.' $3 > 2, *2 > 3$
 Yamashita (2001:205)

The assumption that the NQ stranded in Spec,vP blocks the Q-raising of the dative or accusative NP is supported by data containing an instrumental subject construction.

When the subject can be perceived as a group, it may be expressed with an instrumental Case *–de* (214).

- (214) Kesa-wa John to Mary de inu-o sanpos-ase-ta
 this.morning-TOP John and Mary INST dog-ACC take.a.walk-CAUS-PAST
 ‘John and Mary walked the dog this morning.’ Kishimoto (2005:146)

Following Kishimoto (2009), I assume that the instrumental subject stays in-situ in Spec,vP. First, I show that the instrumental subject is outside VP. Suppose that preposing with *sae* ‘even’ may pick up the VP, (215) indicates that the instrumental subject is not a VP-internal element.

- (215) Ryoori-o tukuri-sae kodomo-tati-de sita
 dish-ACC cook-even child-PL-INST did
 ‘Even cook dishes, only children did.’

Next, I show that the instrumental subject does not move to Spec,TP. The contrast between (216) and (217) demonstrates the difference in places of the two subjects.

- (216) Kodomo-tati-dake-ga ryoori-o tukur-anaka-ta
 child-PL-only-NOM dish-ACC cook-NEG-PAST
 ‘Only children did not cook dishes.’ *only* > *NEG*, **NEG* > *only*

(217) Kodomo-tati-dake-de ryouri-o tukura-naka-ta

child-PL-only-INST dish-ACC cook-NEG-PAST

‘Not only children cooked dishes.’ **only > NEG, NEG > only*

When a focusing particle *dake* ‘only’ is attached to a nominative subject (216), the subject takes a scope over negation, and the sentence means that it is only children that did not cook dishes. In contrast, when *dake* is attached to an instrumental subject (217), the subject takes a scope below negation, and the sentence means that children did cook dishes, but the group involves adults. The sentence with *saiwai* ‘unfortunately’ supports this observation as illustrated in (218). The *dake-de* subject is not compatible with *saiwai*, which modifies at the TP level.

(218) **?*Kodomo-tati-dake-de saiwai ryouri-o tukutta

child-PL-only-INST fortunately dish-ACC cooked

Intended: ‘Fortunately not only children cooked dishes.’

The thing is more complicated, however. See the following example:

(219) Go-kumi no huuhu de ryoori-o tukura-nakat-ta

5-CL-INST of couple INST dish-ACC cook-NEG-PAST

‘Five couples did not cook dishes.’ *5 > NEG, *NEG > 5*

In (219), an instrumental subject necessarily takes the scope over negation. This is derivable if an instrumental subject covertly A'-moves to check the EPP feature of T, and hence it may take the scope over negation, and if *dake* 'only' blocks this covert movement.²⁵ It is correctly expected as in (220) that *saiwai* may be used in the sentence without *dake*. Thus, it is a reasonable assumption that an instrumental subject covertly A'-moves up to Spec,TP, and hence, when it comes to the scope interpretation, it is at Spec,vP.

- (220) Go-kumi no huuhu de saiwai ryoori-o tukura-nakat-ta
 5-CL-INST of couple INST fortunately dish-ACC cook-NEG-PAST
 'Five couple did not cook two dishes.' $5 > NEG, *NEG > 5$

Keeping this assumption in mind, let's see the scope relations of *all* or NQs in the instrumental subject. As is the case of a nominative subject, the subject NQ always takes a scope wider than the object, as in (221).

²⁵ This assumption forces us to further postulate that an expletive is inserted to satisfy EPP in the case of *dake* 'only'. Also, scope of negation should be reanalyzed; given that the instrumental subject A'-moves to Spec,TP, it still should scope below negation. The examples (i) and (ii) show the same issue. In order to take a scope over negation, the manner adverb and the PP need to A-move, unless negation scope somewhat freely.

- (i) Gakusei-ga yorokonde utawa-nakat-ta
 student-NOM joyfully sing-NEG-PAST
 'The student did not joyfully sing. / The student joyfully did not sing.'
 (ii) Gakusei-ga mit-tu no heya de utawa-nakat-ta
 student-NOM 3-CL of room in sing-NEG-PAST
 'The student did not sing in three rooms.' $3 > NEG, NEG > 3$

- (221) Go-kumi no huuhu de hutatu no ryoori-o tukutta
 5-CL-INST of couple INST 2-CL-ACC of dish-ACC cooked
 ‘Five couples cooked two dishes.’ $5 > 2, *2 > 5$

Surprisingly, however, *all* in the subject does not allow the inverse scope (222). It patterns with the FNQ stranded in Spec,vP in that they both block the Q-raising of the VP-internal elements. Again in the same way as the case of a nominative subject, an instrumental subject does not prevent an element from adjoining, by Q-raising, to ApP of the direct object (223). Thus, it is a safe bet that Q-raising is obstructed by an element in Spec,vP, e.g., a subject FNQ and an instrumental subject.

- (222) Zenbu no huuhu de hutatu no ryouri-o tukutta
 all-INST of couple INST 2-CL-ACC of dish-ACC cooked
 ‘All couples cooked two dishes.’ $all > 2, *2 > all$
- (223) Go-kumi no huuhu de zen’in-ni ni-hiki no neko-o miseta
 5-CL-INST of couple INST all-DAT 2-CL-ACC of cat-ACC showed
 ‘Five couples showed two cats to all.’ $5 > all > 2, 5 > 2 > all$

2.6.4.2. *Q-Raising of an FNQ

One peculiar property of an FNQ is that it does not undergo Q-raising. The subject *all* is not ambiguous in the scope against the accusative NP when the NQ of the object

floats out as illustrated in (224) and (225). It is also the case between the dative *all* and the accusative object (226).

- (224) Zen'in-ga gakusei-o kinoo hutari tataita
 all-NOM student-ACC yesterday 2-CL hit
 'All hit two students yesterday.' (cf. 192) $all > 2, *2 > all$
- (225) Zen'in-ga John-ni neko-o kinoo ni-hiki miseta
 all-NOM John-DAT cat-ACC yesterday 2-CL showed
 'All showed two cats to John yesterday.' (cf. 194) $all > 2, *2 > all$
- (226) John-ga zen'in-ni neko-o kinoo ni-hiki miseta
 John-NOM all-DAT cat-ACC yesterday 2-CL showed
 'John showed two cats to all.' (cf. 196) $all > 2, *2 > all$

2.7. Scrambling and FNQ

In (227), as mentioned in 1.2.7, scrambling of an FNQ does not show the scrambling effect. The example (228) shows that, in fact, the opposite case is true as well; when the opponent of the scrambled element in the relative scope is an FNQ, the scrambling effect again does not occur.

- (227) a. [Gakusei-ga san-nin] (kinoo) [kuruma-o ni-dai] nusunda.
 student-NOM 3-CL (yesterday) car-ACC 2-CL stole
 'Three students stole two cars (yesterday).' $3 > 2, *2 > 3$

b. [Kuruma-o ni-dai] [gakusei-ga san-nin] (kinoo) t_{ACC-NQ} nusunda.

$3 > 2, 2 > 3$

c. Ni-dai, [gakusei-ga san-nin] (kinoo) [kuruma-o t_{NQ}] nusunda.

$3 > 2, *2 > 3$

Yamashita (2001:205)

(228) Ni-dai no kuruma-o gakusei-ga kinoo san-nin t_{ACC-NQ} nusunda

2-CL-ACC of car-ACC student-NOM yesterday 3-CL-NOM stole

‘Three students stole two cars yesterday.’ (cf. 226b) $3 > 2, *2 > 3$

This blocking is also observed in the case of ditransitives, as shown in (229b) and (230b).

(229) a. Ni-hiki no inu-ni san-nin no sensei-ga t_{DAT-NQ} esa-o yatta

2-CL-DAT of dog-DAT 3-CL-NOM of teacher-NOM food-ACC fed.

‘Three teachers gave two dogs a food.’ $3 > 2, 2 > 3$

b. Ni-hiki no inu-ni sensei-ga kinoo san-nin t_{DAT-NQ}

2-CL-DAT of dog-DAT teacher-NOM yesterday 3-CL-NOM

esa-o yatta

food-ACC gave.

‘Three teachers gave two dogs food yesterday.’ $3 > 2, *?2 > 3$

(230) a. Ni-hiki no inu-o san-nin no gakusei-ga John-ni t_{ACC-NQ} miseta

2-CL-ACC of dog-ACC 3-CL-NOM of student-NOM John-DAT showed

‘Three students showed two dogs to John.’ $3 > 2, ? 2 > 3$

b. Ni-hiki no inu-o gakusei-ga kinoo san-nin John-ni
 2-CL-ACC of dog-ACC student-NOM yesterday 3-CL-NOM John-DAT
*t*_{ACC-NQ} miseta
 showed

‘Three students showed two dogs to John yesterday.’ $3 > 2, *2 > 3$

Just one of the possible solutions to explain this phenomenon is that an FNQ blocks A-scrambling (at least, of Q-NPs) as well as Q-raising. As a result, the derivation and scope interpretation of (230b) is supposed be like (231). In (231), the accusative NP should be A’-scrambled to TP.

(231) ACC-2 NOM/3 DAT *t*_{ACC} (= 229b) $3 > 2, *2 > 3$

Base: [TP [vP NOM-3 [VP [ApP DAT [Ap’ ACC-2 Ap]]V]]T]

Surface: [TP ACC-2 [TP NOM [vP *t*_{NOM} 3-NOM [VP DAT [ApP *t*_{DAT} [Ap’ *t*_{ACC}]]]] T]

Q-raising: [TP NOM [vP 4-NOM [VP DAT [ApP [Ap’ ACC-2]]]]T]

This view predicts that the accusative NP scrambled beyond a subject FNQ does not function as a binder. This is borne out. First, the accusative NP may be A-scrambled to bind when it lands on vP (232a), or when the subject is a Q-NP (232b). On the other hand, in the case of scrambling over the subject FNQ, the scrambled object cannot be a binder of the dative anaphor (233).

- (232) a. Gakusei-ga kinoo san-nin ni-hiki no neko-o otagai no
 student-NOM yesterday 3-CL-NOM 2-CL-ACC of cat-ACC each.other of
 kainusi-ni t_{ACC-NQ} miseta
 owner-DAT showed
 ‘Three students showed two cats to each other’s owner yesterday.’
- b. Ni-hiki no neko-o san-nin no gakusei-ga otagai no kainusi-ni
 2-CL-ACC of cat-ACC 3-CL-NOM of student-NOM each.other of owner-DAT
 t_{ACC-NQ} miseta
 showed
 ‘Three students showed two dogs to John yesterday.’
- (233) *Ni-hiki no inu-o gakusei-ga kinoo san-nin otagai
 2-CL-ACC of dog-ACC student-NOM yesterday 3-CL-NOM each.other
 no kainusi-ni t_{ACC-NQ} miseta
 of owner-DAT showed
 ‘Three students showed two dogs to each other’s owner yesterday.’

Interestingly, however, *all* finds an escape route. When the scrambled argument is quantified with *all*, FNQs do not block the scrambling effect, as in (234) through (236).

- (234) Zen’in-o sensei-ga kinoo san-nin t_{ACC} tataita.
 all-ACC teacher-NOM yesterday 3-CL-NOM hit
 ‘Three teachers hit all yesterday.’ (cf. 228) $3 > all, all > 3$

(235) Zenbu no inu-ni sensei-ga kinoo san-nin t_{DAT-NQ} esa-o ageta.

all-DAT of dog-DAT teacher-NOM yesterday 3-CL-NOM food-ACC gave

‘Three teachers gave all dogs food yesterday.’ (cf. 229b) $3 > all, all > 3$

(236) Zenbu no inu-o gakusei-ga kinoo san-nin John-ni

all-ACC of dog-ACC student-NOM yesterday 3-CL-DAT John-DAT

t_{ACC-NQ} miseta

showed

‘Three students showed all dogs to John yesterday.’ (cf. 230b) $3 > all, ??all > 3$

The blocking by an FNQ, if any, seems to be limited to an A-movement of NQs. An A-movement of a unquantified NP is also free from the FNQ blocking. The direct object *kadai* ‘assignment’ in (237) should A-move when the nominative NQ takes a scope below negation, since the object is the only possible candidate to check EPP.

(237) Kadai-o gakusei-ga kinoo san-nin sensei-ni t_{ACC}

assignment-ACC student-NOM yesterday 3-CL-NOM teacher-DAT

misen-akat-ta

show-NEG-PAST

‘Three students did not show the assignment to the teacher yesterday.’

$3 > NEG, NEG > 3$

3. MANNER ADVERBIAL NQS

We have seen syntactic and semantic properties of FNQs so far in this paper. For example, semantically, an FNQ should be distributive and will be incompatible with certain types of predicates, and syntactically, an FNQ should obey the locality constraint with the host NP. (63), repeated here as (238), is the typical case of the violation of the locality.

- (238) *Gakusei-ga sake-o san-nin nondeiru.
student-NOM sake-ACC 3-CL drinking
‘Three students are drinking sake.’

Miyagawa and Arikawa (2007) point out that putting a pause between the FNQ and the intervening object improves the sentence as in (71), repeated here as (239). However, this prosodic arrangement produces another reading, viz. a collective reading, which is not explained by the analyses thus far. In this section, I introduce collective, scrambling-resisting NQs, which I call manner adverbial NQs, and show that manner adverbial NQs have different properties than FNQs.²⁶

²⁶ Note that an analysis of adverbial NQs here is irrelevant to the adverbial view of derivations of FNQs, discussed in the section 1.1.2.

(239) ?Gakusei-ga sake-o [PAUSE] SAN-NIN nonda.

student-NOM sake-ACC 3-CL drank

‘Three students drank sake.’

3.1. Collective NQs

While FNQs are supposed to have a distributive reading only, it is possible to interpret the NQ in (239) in a collective reading as long as the NQ and the verb are prosodically united as in (240)²⁷. As a result, one of the possible meanings in (240) is that the three students together drank sake. This reading is most naturally construable in the case of *hutari* ‘two persons’ (241), and *hutari* may also be used as an adjectival modifier (242).

(240) Gakusei-ga sake-o [PAUSE] [san-nin nonda].

student-NOM sake-ACC 3-CL-M drank

‘Three students drank sake.’

(241) Gakusei-ga sake-o asamade [hutari nonda].

student-NOM sake-ACC until.morning 2-CL-M drank

‘Two students drank sake together until the morning.’

²⁷ The judgment ‘?’ in (239) indicates that the sentence is bizarre in a distributive reading. In a collective reading it is acceptable. Henceforth in this chapter, I write down the grammaticality of a collective reading, unless otherwise specified. I describe the manner NQ as ‘number-CL-M’, and the pause is eliminated in the example sentences unless necessary.

However, a collective reading of NQs in the pre-verbal position is apparently less acceptable than a distributive reading. Grammaticality judgments in this chapter are mainly based on author’s intuition, and are relative among the collective reading of NQs in various positions in a sentence.

- (242) *hutari tabi*
 2-CL-M trip
 ‘A trip of two persons together’

3.2. Distribution

Typically, manner NQs occupy positions immediately preceding the verb, as in (240) and (241). Generally, the further it is away from the verb, the less acceptable the sentence is, as illustrated in (243). The manner NQ appears limited to around the verb or VP.

- (243) The distribution of a manner NQ
- | | | | | | |
|------------|--------------|-------------|-------------|------------|-------------|
| (*San-nin) | kono-heya-de | (??san-nin) | gakusei-ga | (*san-nin) | san-nen-kan |
| 3-CL-M | this-room-in | | student-NOM | | 3-year-for |
| (?san-nin) | eigo-o | (san-nin) | mananda. | | |
| | English-ACC | | learned | | |
- ‘Three students learned English for three years in this room.’

(244) shows, however, that it may modify verbal phrases higher than the vP. In one of the possible readings, which is assumed straightforwardly based on the discussion above, the collaboration was between two giants, who take an action of eating. The other reading available is that *hutari* (2-CL-M) modifies the passive morpheme *-rare*, and consequently the collaboration was between two students rather than two giants.

(244) Gakusei-ga kinoo kyojin-ni hutari tabe-rare-ta.

student-NOM yesterday giant-by 2-CL-M eat-PASS-PAST

‘Two students together were eaten by the giant.’ OR

‘Two students were eaten by the two giants.’

Moreover, as in (243) and (245), the manner NQ can immediately precede the subject, but the ambiguity is eliminated. (245) does not mean that two giants together eat students. Given that a pre-nominal manner NQ is an adjectival modifier to the subject, this unambiguity is straightforward. Still, the restriction on the distribution holds as in (246), that is, a manner NQ should be around the VP or vP, and it may not be scrambled.²⁸

(245) ??Hutari gakusei-ga kyojin-ni tabe-rare-ta.

(246) Gakusei-ga (*hutari) kinoo (?hutari) kyojin-ni (hutari) tabe-rare-ta.

3.3. Derivation

I assume that manner NQs are base-generated in the VP like manner adverbs, rather than being derived through movements of the host NP. If the distributional restriction above is correct, it implies that the object of the verb prefers to be scrambled, as illustrated in (247). What causes this movement remains mysterious, since it is not likely

²⁸ I have yet to find a clear answer on why manner NQs may not be scrambled, unlike to manner adverbs.

to be well-motivated syntactically or semantically; the object is authorized enough, and is not the focus, either.

(247) [TP Gakusei-ga [VP/TP sake-o [VP t_{NOM} [VP san-nin t_{ACC} nonda]]]].

student-NOM sake-ACC 3-NOM-M drank

‘Three students drank sake together.’

3.4. Evidence

3.4.1. VP-internal

In this subsection, I demonstrate that the manner NQ is syntactically and semantically different from FNQs. I begin with the locations that the manner NQ occupies in the syntactic structure: as illustrated in (248), manner NQs are inside VP while FNQs are outside.

(248) a. *[VP Kono kagi-de hutari doa-o ake sae]_j kodomo-ga t_j sita
 this key-with 2-CL door-ACC open even children-NOM did

Lit: ‘Even open the door two with this key, children did.’

(= 87, unacceptable as an FNQ)

b. [VP Kono kagi-de doa-o hutari ake sae]_j kodomo-ga t_j sita
 this key-with door-ACC 2-CL-M open even children-NOM did

Lit: ‘Even open the door two with this key, children did.’

It is correctly predicted that manner NQs appear in the positions where FNQs are not allowed. Unless a pause is inserted before the FNQs (see section 1.2.8), FNQs should not be stranded in VP-internal positions, as in (136), repeated here as (249). In contrast, the pre-verbal position is available for manner NQs: compare (250).

(249) a. *?Gakusei-ga ofisu ni yorokonde san-nin kita.

student-NOM office to joyfully 3-CL came

Intended: ‘Three students joyfully came to the office.’

b. *?Gakusei-ga yorokonde ofisu ni san-nin kita.

c. *?Gakusei-ga yorokonde san-nin ofisu ni kita.

(= 136, unacceptable as FNQs)

(250) Gakusei-ga ofisu ni yorokonde /// san-nin kita.

student-NOM office to joyfully 3-CL-M came

‘Three students together joyfully came to the office.’

Similarly, the ambiguity in a passive sentence arises with manner NQs. *Yorokonde* ‘joyfully’ in (251a) unambiguously modifies the passive morpheme, while the counterpart may modify the students as well as in (251a), or may modify the actor (251b). In the latter case, the sentence means that students suffered from being kicked by a group of three who had joy.

- (251) a. Gakusei-ga yorokonde t_{NOM} san-nin ke-rare-ta
 student-NOM joyfully 3-CL kick-PASS-PAST
 ‘Three students were joyfully kicked.’ (=129, as an FNQ)
- b. Gakusei-ga yorokonde t_{NOM} san-nin ke-rare-ta
 student-NOM joyfully 3-CL-M kick-PASS-PAST
 ‘Three students together were joyfully kicked.’ OR
 ‘?Students were joyfully kicked by groups of three.’

3.4.2. The host NP

In (244), the manner NQ modifies an agent which is inside a PP in a passive. Due to the locality constraint, the FNQ may not be associated with the host inside PP as illustrated in (54), repeated here as (252). Moreover, the host does not need to be overt as can be seen in (251b).

- (252) *Kodomo-tati-wa kooen ni futatu itta
 child-PL-TOP park to 2-CL went
 Intended: ‘Children went to two parks.’ (= 54)

3.4.3. Object/adjunct intervention

Since manner NQs are confined within the VP, NQs and host NPs do not necessarily obey the locality constraints. Hence, any element intervenes between the host NP and the manner NQs: the object (253a) and a manner adverb (253b).

- (253) a. *Kodomo-ga geragerato hutari waratta
 child-NOM loudly 2-CL laughed
 ‘Two children laughed.’ (= 75, unacceptable as an FNQ)
- b. Kodomo-ga geragerato /// hutari waratta
 child-NOM loudly 2-CL-M laughed
 ‘Two children laughed together.’

3.4.4. Ellipsis

A manner NQ contrasts with an FNQ in the use of the ellipsis. Given that the VP ellipsis and *do-so* substitution target the lower VP, a manner NQ and an FNQ differ in whether or not it is included in the elided segment. When the VP is elided in the sentence with an FNQ, the FNQ is not involved in the deleted segment. Hence, the number of subject *sensei* ‘teacher’ is not defined by the FNQ (254a). Conversely, since a manner NQ is included in the elided elements, i.e., the VP, the number of teachers who read together should be three in (254b).

- (254) a. Gakusei-ga kinoo san-nin kono hon-o yonda.
 student-NOM yesterday 3-CL this book-ACC read.
 Sensei-mo soosita.
 teacher-(NOM)-also did so
 ‘Three students read this book yesterday. Teacher(s) did so, too.’

b. Gakusei-ga kinoo kono hon-o /// san-nin yonda.

student-NOM yesterday this book-ACC 3-CL-M read.

Sensei-mo soosita.

teacher-(NOM)-also did so

‘Three students together read this book yesterday. Three teachers together did so, too.’

3.4.5. Double NQ

The last syntactic discrepancy between FNQs and manner NQs is the consistency with the host Q-NP. Although it is quite redundant and only marginally acceptable, an NQ may be used twice, as in (255).

(255) ??Hutari no gakusei-ga kinoo toshokan de hutari benkyoosita

2-CL of student-NOM yesterday library in 2-CL-M studied

‘Two students studied in the library together yesterday.’

(255) can be accounted for by assuming that one of them is an FNQ, and the other is a manner NQ. This phenomenon is similar to a partitive reading, in which the host NP may contain an NQ besides an FNQ, as in (256).

(256) [Narande hasitteita suu-dai no torakku-ga ni-san-dai gaadoreeru
lined.up running several-CL of truck-NOM 2/3-CL guardrail
ni butukatta.

to struck

‘Two or three of the several trucks that were driving abreast struck the guardrail.’

(=164)

However, a manner NQ is also different from a partitive NQ. First of all and crucially, a manner NQ is not allowed a partitive reading. (257) implies that all the students jumped into the pond, forming 50 pairs. In contrast, in (256) it is only two or three trucks that struck the guardrail, and the rest is safe and sound.

(257) Hyaku-nin no gakusei-ga tugitugi-to hutari ike ni tobikonda.
100-CL of student-NOM one.after.another 2-CL-M pond to jumped.into
‘A hundred of students, in pairs, jumped into the pond one after another.’

Second, the numeral in a manner adverb may be identical to the one in Q-NP as in (255). When a partitive NQ is the same as the one in Q-NP, it needs to be supported by *zenbu* ‘all’ (258).

- (258) [Narande hasitteita go-dai no torakku-ga totuzen go-dai-zenbu
 lined.up running 5-CL of truck-NOM suddenly 5-CL-all
 gaadoreeru ni butukatta.
 guardrail to struck
 ‘All of the five trucks that were driving abreast suddenly struck the guardrail.’

Third, a partitive NQ does not necessarily denote a single event; in (256) it is possible that each of a few trucks struck in different places in a different moment. Meanwhile, two persons in each pair in (257) should jump together.

Lastly, a partitive NQ can be an approximate NQ as in (256), while a manner NQ is necessarily a cardinal number, as described in (259).

- (259) *?Hyaku-nin no gakusei-ga ike ni ni/san-nin tobikonda.
 100-CL of student-NOM pond to 2/3-CL-M jumped.into
 Intended: ‘A hundred of students, in groups of a few people, jumped into the pond.’

3.4.6. Quantification

The fundamental semantic difference between a manner NQ and an FNQ is the quantification; these two types of NQs differ in what each of them quantifies. As can be observed in (257) and other examples above, a manner NQ does not quantify the host NP. Even when the host NP does not include an NQ, this reading is available. For instance,

the number of children in (260) does not necessarily equal to 10. It is plausible that many children were divided into groups of 10, and each group performs.

- (260) Kodomo-ga butai de zyuu-nin odotta
 child-NOM stage at 10-CL danced
 ‘Ten children danced at the stage.’ (=74)

The difference in quantifications can be observed in (261). When the NQ modifies the subject, as an FNQ, it is the three students and John who drunk sake. Meanwhile, when the NQ is a manner adverbial, the number of persons who drunk sake is three.

- (261) a. Gakusei-ga John to san-nin sake-o nonda.
 student-NOM John with 3-CL-NOM sake-ACC drunk
 ‘Three students drunk sake with John.’
 b. Gakusei-ga John to san-nin sake-o nonda.
 student-NOM John with 3-CL-M sake-ACC drunk
 ‘Two students with John drunk sake by a group of three.’

This behavior of a manner adverb raises a question concerning the locality of an FNQ and its host. Nakanishi (2007, 2008) claims that FNQs modify not only the event, which is denoted by the verbal phrase, but also the host NP. Her claim is derived from the agreement on the type of noun. It is obvious that a manner NQ does not modify the host NP, but still the classifier must be selected according to the type of the noun.

3.4.7. Scope

A manner NQ always takes the lower scope. First, a manner NQ is in the position that is seemingly the lowest possible position, at the end of the sentence processing:

- (262) [TP Gakusei-ga [TP yorokonde [vP/TP sake-o [vP t_{NOM} [VP t_{Adv} san-nin
 student-NOM joyfully sake-ACC 3-CL-M
 t_{ACC} t_V] t_{V-v}]] nonda]].

drank

‘Three students together joyfully drank sake.’

In addition, it is a collective adverbial, and hence it is implausible for the manner NQ to take a wider scope, which requires the element to be distributive. Consequently, insomuch as the manner NQ is not Q-raised, its scope is necessarily below other quantifiers. For instance, a locative adverbial *mit-tu no kyoo situ de* ‘in three classrooms’ in (263) takes the scope wider than the manner NQ, while it takes the scope either wider or narrower than the FNQ. This scope relation is apparent since the locative adverbs can be base-generated in a vP-external position. Furthermore, an instrumental adverb *mit-tu no hanmaa de* ‘with three hammers’, which is scrambled out of the VP, should scope over the manner NQ as in (264).

(263) Gakusei-ga mit-tu no kyoositu de /// go-nin tukue-o kowasita
 student-NOM 3-CL of classroom in 5-CL desk-ACC broke
 ‘Five students broke a desk in three classrooms’

- a. As an FNQ : $5 > 3$, $?3 > 5$
- b. As an manner NQ: $*5 > 3$, $3 > 5$

(264) Gakusei-ga mit-tu no hanmaa de /// go-nin doa-o kowasita
 student-NOM 3-CL of hammer with 5-CL door-ACC broke
 ‘Five students broke a door with three hammers.’

- a. As an FNQ : $?5 > 3$, $*3 > 5$ (=88)
- b. As a manner NQ: $*5 > 3$, $?3 > 5$

In contrast to manner adverbs, the object may be A- or A'-scrambled. However, the scope relation between the object and the manner NQ is fixed. When the object is A-scrambled to vP or TP, it is necessarily higher than the manner adverb, as in (265b). On the other hand, when it is A'-scrambled, it is reconstructed to the complement position in the VP. Even though the manner NQ is higher than the object as in (266), it cannot take a scope over the object since the manner NQ is collective. Thus, the scope relation is fixed.

(265) Gakusei-ga san-satu no hon-o /// t_{NOM} hutari t_{ACC} katta.
 student-NOM 3-CL-ACC of book-ACC 2-CL-NOM bought
 ‘Two students bought three books.’

- a. As an FNQ : $*?3 > 2$, $2 > 3$
- b. As a manner NQ: $?3 > 2$, $*2 > 3$

(266) [TP Gakusei-ga [TP/VP ~~san-satu no hon-o~~ [VP *t*_{NOM} [VP hutari san-satu no hon-o
V]v]T]].

3.4.8. Predicates

A manner adverb is free from some of the constraints on predicates in a sentence with FNQs. First, while Nakanishi (2008) claims that FNQs is incompatible with a verb that denotes a single event such as *korosu* ‘kill’ as in (140b), repeated here as (267a), a manner NQ would survive as shown in (267b).²⁹

(267) Gakusei-ga kinoo san-nin Peter-o korosita.
students-NOM yesterday 3-CL Peter-ACC killed
‘Three students killed Peter yesterday.’

a. As an FNQ : * (= 131c)

b. As a manner NQ: ?

Second, a manner adverb may be used in the contexts which Mihara (1998) claims violate the aspectual restriction (section 2.4.2). Since (170), repeated here as (268), does not imply the result of the event or the action, the sentence sounds incomplete. Meanwhile, (269) shows that the manner NQ may be employed in the same context because the restriction is imposed only FNQs.

²⁹ Another reason why (267b) is less acceptable is that manner NQs somewhat connote a positive cooperative action, and hence it conflicts with the negative feeling of an action of killing.

- (268) ??Gakusei-ga toshokan de sanjuu-nin benkyoosita
 student-NOM library in 30-CL studied
 ‘Thirty students studied in the library.’ (=170)
- (269) Gakusei-ga toshokan de hutari benkyoosita
 student-NOM library in 30-CL-M studied
 ‘Students studied in the library in groups of two.’

3.4.9. Specificity

One of the well-discussed semantic constraints on FNQs is the specificity, but the specificity restriction is not valid for a manner NQ. Given that FNQs are limited to a nonspecific reading, a pluralizer *tati*, which leads the NP to be specific, conflicts with the FNQ, as shown in (270a). However, a manner NQ is suited to the *tati*-plural NP (270b).

- (270) a. ??Boku-wa kodomo-tati-o hissini san-nin sagasiteiru.
 I-TOP child-PL-ACC desperately 3-CL look.for
 Intended: ‘I am desperately looking for the three children.’ (=158)
- b. Gakusei-tati-ga John-o hissini futari sagasiteiru.
 student-PL-NOM John ACC desperately 2-CL-M look.for
 ‘Students are looking for John in groups of two.’

3.5. Restrictions

3.5.1. Nominal types and classifiers

Another difference between a manner NQ and an FNQ is that the former can be used in more limited circumstances. I begin with the possible types of nouns and classifiers. In a collective usage, the subject should be volitional or agentive so that it might do something in a collaborative way. Hence, classifiers are limited to *nin* for people and *hiki* or other variants for animal (271). Other classifiers such as *tu* for things and *dai* for vehicles, can be used in the case of personification, or in the case of metonymy that denotes people, as in (272).

(271) a. Gakusei-ga kinoo hutari sake-o nonda.

student-NOM yesterday 2-CL-M sake-ACC drank

‘Two students together drank sake yesterday.’

b. Inu-ga uraniwa de san-hiki asondeiru.

dog-NOM backyard in 3-CL-M playing

‘Three dogs are playing in the backyard.’

c. Kotori-ga oozora-o san-wa tondeiru.

little.bird-NOM sky-ACC 3-CL-M flying

‘Three little birds are flying in the sky together.’

(272) Booto-ga tyuukantiten-o san-tei tuukasita.

boat-NOM the.halfway.point-ACC 3-CL-M passed.through

‘Three boat passed through the halfway point together.’

Meanwhile, a noun that is not likely to take an action together does not allow the collective reading (273). Interestingly, even *mei*, a classifier for person, may not become a manner NQ, even though its meaning is identical to *nin* (274).

- (273) *Ie-ga jisin-de san-ken kowareta.
house-NOM earthquake-by 3-CL-M broke.down
‘Three houses broke down by the earthquake.’ (Acceptable as an FNQ)
- (274) *Gakusei-ga kinoo san-me sake-o nonda.
student-NOM yesterday 3-CL-M sake-ACC drank
‘Three students drank sake yesterday.’ (Acceptable as an FNQ)

3.5.2. Collaboration

3.5.2.1. Number

A manner NQ describe an event in which people or animals do something in cooperation with each other. It denotes a positive event. As a result, as (275) describes, the number should be usually small enough to be perceived as a cooperative action. The big number, presumably more than four, is less acceptable unless the context helps us construe a cooperative event, as in (276) and (277).

- (275) *?Gakusei-ga kinoo Peter-o 41-nin korosita.
student-NOM yesterday Peter-ACC 41-CL killed
‘Forty one students killed Peter yesterday.’

(276) ?All Blacks no sensyu-ga pitch de 15-nin tatakata.

the.All.Blacks of player-NOM pitch on 15-CL-M played

‘Players in the All Blacks played as a team of 15.’

(277) ?Kinoo no 30-nin-31-kyaku-race de, seito-ga issyoukenmei

yesterday of 31-legged race in pupil-NOM hard

30-nin hassita.

30-CL-M ran

‘In the 31-legged race yesterday, 30 pupils collaboratively ran hard’

3.5.2.2. Action

For the same reason, the action should be something compatible with cooperative action. Hence, an action that is likely to be done by a single person conflicts with the connotation of a manner NQ. Therefore, (278) requires a special context, e.g., circus performers practicing for a show. Also, such adverbs as *kakuji* ‘each’, *sorezore* ‘each’, *kojintekini* ‘individually’, which force the participants to take actions individually, are not consistent with a manner NQ as in (279).

(278) *Gakusei-ga kinoo itirinsya-ni san-nin notta

student-NOM yesterday unicycle-on 3-CL-M rode

‘Three students rode a unicycle yesterday.’ (Semantically awkward as an FNQ)

- (279) Gakusei-ga kinoo Peter-o kakuji 3-nin korosita.
 student-NOM yesterday Peter-ACC each 3-CL killed
 ‘Three students each killed Peter yesterday.’ (Acceptable as an FNQ)

3.5.3. Volition

As mentioned above, a manner NQ implies that the subject take an action together, presumably helping each other. Consequently, the result should be achieved with the will. An event that does not involve the will of the subject, such as winning a lottery (280), does not follow this constraint. Similarly, an adverb *tamatama* ‘accidentally’ is contradictory to this requirement (281).³⁰

- (280) Gakusei-ga kinoo takarakuji ni san-nin atatta.
 student-NOM yesterday lottery to 3-CL won
 ‘Three students won the lottery yesterday.’
 (Unacceptable as a manner NQ, and acceptable as an FNQ)

- (281) Gakusei-ga kinoo Peter-o tamatama san-nin korosita.
 student-NOM yesterday Peter-ACC accidentally_{Manner} 3-CL killed
 ‘Three students killed Peter yesterday.’
 (Unacceptable as a manner NQ, and Semantically bizarre as an FNQ)

³⁰ (281) is acceptable if the adverb modifies *san-nin* (3-CL) or the whole sentence.

3.5.4. Prosody

In order to be perceived to form a unit with the verb or verbal predicates, a manner adverb requires specific prosody. Typically, a pause is needed just before the NQ as in (282). However, Miyagawa and Arikawa (2007) point out that a pause just after the NQ enhances a collective reading (283).

(282) a. *?Gakusei-ga kinoo Peter-o san-nin //// korosita.

student-NOM yesterday Peter-ACC 3-CL-M killed

Intended: ‘Three students together killed Peter yesterday.’

b. *?Gakusei-ga John-ni san-nin //// hon-o prezensita.

student-NOM John-DAT 3-CL-M book-ACC presented

Intended: ‘Three students together presented books to John yesterday.’

(283) ?Gakusei-ga kinoo san-nin /// Peter-o korosita.

student-NOM yesterday 3-CL Peter-ACC killed

‘Three students killed Peter together yesterday.’

The example (283) seems to indicate that a manner NQ need not be prosodically adjacent to a verb, or that an FNQ allows a collective reading. The NQ in (283) is structurally apart from the host NP. Nevertheless, to be construed collectively, the NQ should be included in the same prosodic unit with the subject as in (284).

(284) ??Gakusei-ga /// kinoo san-nin /// Peter-o korosita.

student-NOM yesterday 3-CL Peter-ACC killed

‘Three students killed Peter together yesterday.’

(Marginally acceptable in a collective reading)

This gap can be explained with an assumption that an NP, adverb, and NQ form a larger nominal unit, as discussed in the section 1.1.1. If a restriction holds that only a structural constituent can be coordinated, as in (17), repeated here as (285), the fact that an NP-Adv-NQ sequence can be coordinated may indicate that the string forms a single unit. The contrast in (286) also supports this claim.

(285) ?John-ga [hon-o kinoo san-satu] to [DVD-o kyoo

John-NOM book-ACC yesterday 3-CL and DVD-ACC today

ni-mai] katta

2-CL bought

‘John bought three books yesterday, and two DVDs today.’

(286) a. ?Gakusei-ga souko de san-nin /// Peter-o korosita

student-NOM warehouse in 3-CL Peter-ACC killed

‘Three students killed Peter yesterday.’

(Acceptable, though not fully, in a collective reading)

b. ??Gakusei-ga naihu de san-nin /// Peter-o korosita

student-NOM knife with 3-CL Peter-o killed

‘Three students killed Peter with the knife yesterday.’

(Marginally acceptable in a collective reading)

A ‘scene-setter’ adverbial, as well as a time adverb in (283), may intervene between the FNQ and the host NP, while an instrumental adverbial may not intervene since it brings new information.

In this chapter, I have introduced NQs distinct from FNQs: manner adverbial NQs. These NQs have a particular collaboration connotation, and are restricted in the location. On the other hands, since a manner NQ is not an FNQ, it does not observed the locality requirement, and implements the quantification in a different way than an FNQ.

4. TOPICAL ADVERBIAL NQS

4.1. Wide-scope NQs and specificity

An NQ in the sentence-initial position often presents characteristics contradictory to the observations of a ‘floating’ NQ. In this chapter, I introduce another type of non-floating NQ: topical adverbial NQs. The difference between FNQs and topical NQs is observed in scope relations and specificity; a topical adverbial NQ is a wide-scope specific NQ.^{31,32}

NQ scrambling is a ‘defective’ A-movement, which partially shows properties of an A-movement: scoping against negation, and suppressing a WCO violation. Conversely, NQ-scrambling does not raise the scrambling effect (287). However, there are the cases as in (288), in which sentence-initial NQs may have a wide scope, and seemingly cause the scrambling effect.

- (287) a. [Gakusei-ga san-nin] (kinoo) [kuruma-o ni-dai] nusunda.
 student-NOM 3-CL (yesterday) car-ACC 2-CL stole
 ‘Three students stole two cars (yesterday).’ $3 > 2, *2 > 3$
- b. [Kuruma-o ni-dai] [gakusei-ga san-nin] (kinoo) t_{ACC-NQ} nusunda. $3 > 2, 2 > 3$
- c. Ni-dai, [gakusei-ga san-nin] (kinoo) [kuruma-o t_{NQ}] nusunda. $3 > 2, *2 > 3$

Yamashita (2001:205)

³¹ The naming is arbitrary, and I do not specify any syntactic category or phrase for topical NQs.

³² As its name suggests, I simply assume that thematic adverbial NQs are base-generated in the surface position. That is why it may take a wider scope than arguments inside TP. However, the possibility that NQs may be A-scrambled and show the scrambling effect in certain conditions has not yet been rejected.

(288) a. Ni-hiki, san-nin no gakusei-ga John-ni neko-o miseta.

2-CL-ACC 3-CL-NOM of student-NOM John-DAT cat-ACC showed

Lit.: 'Two (cats), three students showed cats to John.' $3 > 2, 2 > 3$

b. Ni-hiki, san-nin no gakusei-ga inu-ni hutatu no esa-o yatta.

2-CL-DAT 3-CL-NOM of student-NOM dog-DAT 2-CL-ACC of food-ACC gave

Lit.: 'Two (dogs), three students gave dogs two pieces of food.' $3 > 2, ?2 > 3$

c. Ni-hiki, John-ga san-nin no sensei-ni inu-o miseta

2-CL-ACC John-NOM 3-CL-DAT of teacher-DAT dog-ACC showed

Lit.: 'Two (dogs), John showed dogs to three students.' $3 > 2, 2 > 3$

First of all, I show here that these peculiar NQs have different features from Q-NPs that show the scrambling effect as in (287b), that is, the specificity. As discussed in 2.2, FNQs and NP-NQs are nonspecific unless the host NP is definite or contrastive. (289) illustrates that the NP-NQ does not have a specific reading. Similarly (290) shows that the scrambled NQ typically have a nonspecific reading only.

- (289) Neko-o ni-hiki san-nin no gakusei-ga John-ni t_{ACC} t_{NQ} miseta
 cat-ACC 2-CL-ACC 3-CL-NOM of student-NOM John-DAT showed
 no-wa sitteita kedo, sensei-mo san-nin John-ni ϕ
 that-TOP knew but teacher-(NOM)-also 3-CL-NOM John-DAT
 miseta no-wa sir-anakat-ta.
 showed that-TOP know-NEG-PAST
 ‘I knew that three students showed two cats to John, but I did not know that three
 teachers also showed (two cats) to John.’ $3 > 2$: *Nonspecific*, $2 > 3$: *Nonspecific*
- (290) Ni-hiki, san-nin no gakusei-ga neko-o mita no-wa sitteita kedo,
 2-CL-ACC 3-CL-NOM of student-NOM cat-ACC saw that-TOP knew but
 san-nin no sensei-mo mita no-wa siranakata
 3-CL-NOM of teacher-(NOM)-also saw that-TOP know-NEG-PAST
 ‘I knew that three students saw two cats, but I did not know that three teachers
 also saw (two cats).’ $3 > 2$: *Nonspecific*, $*2 > 3$

Meanwhile, (291) shows that the NQ in (288a) may receive a specific reading. The contrast between (288a) and (291) suggests that topical NQs does not appear in a transitive sentence, but do in a ditransitive sentence. Surely, the wide-scope reading is available in other complex sentences, e.g., indirect adversity passives (292) and causatives (293).

- (291) Ni-hiki san-nin no gakusei-ga John-ni neko-o miseta no-wa
 2-CL-ACC 3-CL-NOM of student-NOM John-DAT cat-ACC sowed that-TOP
 sitteita kedo, san-nin no sensei-mo miseta John-ni
 knew but 3-CL-NOM of teacher-(NOM)-also showed John-DAT
 miseta no-wa sir-anakat-ta.
 showed that-TOP know-NEG-PAST
 ‘I knew that three students showed two cats to John, but I did not know that three
 teachers also showed (the two cats / two cats) to John.’

3 > 2: Nonspecific, 2 > 3: Specific

- (292) a. Yo-nin no sensei-ga John-ni mit-tu no jugyoo-o sabo-rare-ta
 4-CL-NOM of student-NOM John-DAT 3-CL-ACC of class-ACC skip-PASS-PAST
 ‘Four teachers had John skip three classes.’ *4 > 3, *3 > 4*
 b. Mit-tu, yo-nin no sensei-ga John-ni mit-tu no jugyoo-o sabo-rare-ta
4 > 3, ?3 > 4
- (293) a. Yo-nin no sensei-ga san-hiki no inu-o oyog-ase-ta.
 4-CL-NOM of teacher-NOM 3-CL-ACC of dog-ACC swim-CAUS-PAST
 ‘Four teachers made three dogs swim.’ *4 > 3, *3 > 4*
 b. San-hiki, yo-nin no sensei-ga inu-o oyog-ase-ta. *4 > 3, ?3 > 4*

Alam (1997) introduces example (294) to point out that an FNQ may be specific. As I indicate in 2.2, the specificity seems to stem from the clause *omosirosoo nanode* ‘seem to be interesting’, but the nonspecific reading is still available in (294). With the

context of (294), an NQ used with a transitive sentence may also have a specific, wide-scope reading, as shown in (295).

- (294) Ni-hon tomodati-ga eiga-o mite kita. ϕ omosiro-soona-node
 2-CL friend-NOM movie-ACC see come interesting-see-because
 bokumo ϕ miru-kotoni-sita
 I-(NOM)-also see-to-decided
 ‘My friend saw two movies. As (they) seem to be interesting, I have decided to
 see (the two movies).’ *Specific* Alam (1997:385)

- (295) Ni-hon, san-nin no tomodati-ga eiga-o mite kita node
 2-CL-ACC 3-CL-NOM of friend-NOM movie-ACC see come since
 boku-mo ϕ miru-kotoni-sita
 I-(NOM)-also see-to-decided
 ‘Since three of my friends saw two movies, I decided to see (the two movies / two
 movies).’ *3 > 2: Nonspecific, 2 > 3: Specific*

4.2. Prosody and topicality of the NQ

In order for an NQ in the sentence-initial position to be an adverbial, it needs to be prosodically salient. Buried in topic or focus phrases, the NQ is no longer prosodically

prominent, and consequently, it is hard to construe it as a topical element (296). (297) illustrates that in order for the NQ to stand out, it seems that a pause is usually needed.³³

(296) Kinoo ni-hon kono eigakan-de, san-nin no tomodati-ga eiga-o
 yesterday 2-CL-ACC this theatre-at 3-CL-NOM of friend-NOM movie-ACC
 mite kita
 see came

‘Yesterday, at this theater, three of my friends saw two movies.’ $3 > 2, *2 > 3$

(297) Kinoo, /// NI-HON /// kono eigakan-de san-nin no tomodati-ga eiga-o
 mite kita. $3 > 2, ?2 > 3$

Thus, some sentence-initial NQs, especially in complex sentences, show different properties from scrambled FNQs: scope, specificity, and prosody, and hence this type of

³³ With a different prosodic pattern, an NP-NQ case may receive a specific reading (i). I postulate that the NQ here is neither a thematic NQ nor an FNQ; it is a Case-dropped pronoun. As in (ii), an NQ can function as a pronominal, show the scrambling effect, and take a specific reading (what kind of animal it is should be indicated in the context). In lieu of the NQ, *neko* ‘cat’ may play a role of the theme the sentence in (i).

(i) Neko-o, ni-hiki san-nin no gakusei-ga John-ni t_{ACC} t_{NQ} miseta no-wa sitteita
 cat-ACC 2-CL-ACC 3-CL-NOM of student-NOM John-DAT showed that-TOP knew
 kedo, sensei-mo san-nin John-ni ϕ miseta no-wa sir-anakat-ta.
 but teacher-(NOM)-also 3-CL-NOM John-DAT showed that-TOP know-NEG-PAST
 ‘I knew that three students showed two cats to John, but I did not know that three teachers also showed two cats to John.’

(ii) a. San-nin no gakusei-ga ni-hiki(-o) mita.
 3-CL-NOM of student-NOM 2-CL-ACC saw.
 ‘Three students saw two (animals).’ $3 > 2, *2 > 3$
 b. Ni-hiki(-o) san-nin no gakusei-ga $t_{NQ(ACC)}$ mita
 2-CL-ACC 3-CL-NOM of student-NOM saw $3 > 2, 2 > 3$

NQs, which I call topical adverbial NQs, should be considered distinct from scrambled FNQs.

5. CONCLUDING REMARKS

5.1. Summary

What we have seen thus far are syntactic properties of FNQs, semantic properties of FNQs, and what I called ‘non-floating’ adverbial NQs, viz., manner NQs and topical NQs. FNQs are restricted with respect to floatability and target locations (section 1.2). FNQs can barely be associated with NPs other than the nominative subject and the accusative object. Moreover, subject FNQs are more restrained than object FNQs in terms of their distributions. By and large, subject FNQs may not float into the VP. First, the objects and VP-internal adjuncts are not allowed to intervene between subject FNQs and the subject host NP. Also, I pointed out that subject FNQs are outside the VP even in the cases of passives and unaccusatives. In addition, scrambling is not fully allowed to subject FNQs. Miyagawa (1989) even claims that subject NQs may not be scrambled. Meanwhile, these constraints can be circumvented with pragmatic and prosodic considerations. Given that a Japanese sentence situates the focus of the sentence in the pre-verbal positions, the floatability of FNQs respects how salient information on NQs is in the context. Putting a pause subsequent to the intervener, especially objects and VP-internal adjuncts, between the subject and its FNQ, forces the intervener to be separated from the FNQ, and enables the FNQ to be related to the subject.

Next, FNQs establish semantic properties such as distributivity, (non)specificity, partitivity, and scope relations. FNQs can be interpreted in a distributive reading, but not in a collective reading (section 2.1). As for specificity, FNQs behave differently in

different forms. When it is bare and less focused, an FNQ is nonspecific. When it is modified or contrastive in the context, it may or may not be specific (section 2.2). An FNQ is particular in terms of partitivity. When it follows the host NP, it allows a partitive reading. A scrambled FNQ preceding the host NP does not have this reading (section 2.3). Thus, scrambling alters the meaning of the sentence. For instance, A-scrambling enables scope relations that cannot be achieved in the base word order (scrambling effect, section 1.1). Besides the partitivity, however, FNQs affect the behavior of scrambled elements. First, it blocks Q-raising of other quantifiers occupying lower than the FNQs (section 2.5). Second, an FNQ blocks the scrambling effect (section 2.6). Moreover, an FNQ itself shows the properties resisting against semantic operations. An FNQ is not semantically affected by scrambling except for the partitivity. It does not undergo Q-raising, either (sections 2.5 and 2.6).

Chapter 3 introduced ‘nonfloating’ NQs, i.e., manner adverbial NQs, which shows unique syntactic and semantic properties. A manner reading in NQs is obtained almost exclusive to the pre-verbal position, especially when it is split up from the preceding element by a pause. It does not follow some of the syntactic properties that are imposed to FNQs: wider variety of host NPs and free from the object or adjunct intervention (section 3.4). It also differs from FNQs in semantic properties such as scope relations and specificity (section 3.4). On the other hand, since a manner NQ is limited to a collective and also cooperative reading, the host NP and predicates are prone to meaning constraints (section 3.5).

Chapter 4 introduced another type of ‘nonfloating’ NQ, i.e., topical adverbial NQs. This type of NQs is observed only in the sentence initial position. Its divergence

from FNQs can be seen in its relative scope and the specificity. Topical NQs necessarily takes a wider scope, and may be specific.

5.2. Theoretical implications

Based on what I have claimed, there might be as many as seven types of NQs, as listed in (298). In addition to FNQs, I posited ‘nonfloating’ adverbial NQs, and also suggested adjectival NQs, and suggested that NQs can be used as an adjectival modifier or a pronominal.

(298) Varieties of NQs

- a. Q-NP, including NP-NQ
- b. Floating NQ
- c. Partitive NQ
- d. Manner adverbial NQ
- e. Topical adverbial NQ
- f. Adjectival NQ
- g. Pronominal NQ

The diversity always ends up in formulating the uniformity. Although each of these varieties shows different properties, the thing is that they are somewhat systematically different. For instance, most of the properties of FNQs discussed so far are those of Q-NPs. In other words, FNQs are the more restricted version of Q-NPs. Presumably, it

makes sense to assume that the differences are derived through the differences in syntactic structures. If this narrowing down can be attributed to the syntax of FNQs, e.g., the existence of a phrase brings diverse, but usually restricted, features. Watanabe (2008) proposes that the nonspecificity of FNQs and NP-NQs is defined as a property of D. When a nominal phrase is piled up to QP in his term, the QP is allowed to read in a specific reading. Meanwhile, when a nominal phrase is built up to DP, a specific reading cannot be achieved due to the non-specific feature of D. This view is consistent with DP-internal syntactic movements and with stranding view of FNQs. When the semantic properties of FNQs and Q-NPs can be defined with syntactic structures and/or with certain categories, it would should turn out that FNQs are peculiar variants of Q-NP, the properties depending on the syntax. Haig (1980) postulates, on the other hand, that a partitive reading is structure dependent. The post-host position initiates the partitivity into FNQs. Given that the collectivity of manner NQs and adjectival NQs can be integrated into an attributive NQ, whose behaviors are motivated through syntactic operations or certain locations in the structure, then these NQs can be formulated as a subtype of the Q-NP. Given that scoping of topical NQs can be paraphrased into a syntactic deviance from Q-NPs, and that pronominal NQs can be parsed as a variants of Q-NPs, e.g., a Q-NP with a null NP, then all the possible NQs in (290) finally are incorporated into a single base form and its variants. Miyagawa's (2010) hypothesis on αP might provide an account for this assumption. In the same way as an assumption that sentences in each language has a basic structure, from which various constructions are derived through syntactic operations like agreements and movements, phrases containing a (numeral) quantifier are generated from the least restricted form, that is, Q-NP.

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